

University of Nevada, Reno

**The Contribution of Peer-mentorship in a Dental Hygiene Program to Confidence in Initial  
Professional Practice**

A dissertation submitted in partial fulfillment of the Requirements for the degree of  
Doctor of Education in Educational Leadership

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## Abstract

Dental hygienists are an essential constituent of the public health system. Research related to effective components of dental hygiene programs offers an opportunity to improve public oral health-care across the nation by graduating confident dental hygienists. The confidence of a dental hygienist influences their clinical judgment and how patients perceive their abilities. Peer-mentorship in dental hygiene education offers second-year level students the opportunity to provide support to first-year level students. Advantages and disadvantages for both the mentor and the mentee have been identified. The central research question of this study asked: What is the contribution of peer-mentorship in a dental hygiene program to confidence in initial professional practice? The participants included 34 students and three full-time faculty from a dental hygiene program in the western region of the United States. A mixed methods research design was used. Quantitative data included: surveys, graduation rates, and national board and regional/state clinical test scores. Qualitative data included telephone interviews with twelve students and three faculty who taught the three cohorts. Four students only had mentors during the first year of their dental hygiene program. Four students only acted as a mentor during the second year of their dental hygiene program. Four students had mentors during the first year and acted as a mentor during the second year of their dental hygiene program. Results from this study indicate that peer-mentorship as designed and implemented was not related to initial confidence in professional practice. Confidence to practice dental hygiene was associated with program rigor and initial professional practice. General peer-mentorship appeared to improve the learning experiences for the students who established positive relationships.

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## Table of Contents

Abstract .....	i
Acknowledgements.....	ii
Table of Contents.....	iii
List of Tables.....	vii
List of Figures.....	viii
Chapter 1 - Introduction.....	1
Statement of the Problem.....	3
Purpose of Study and Research Design.....	5
Background of the Study.....	5
Significance of the Study.....	6
Limitations.....	6
Delimitations.....	8
Definitions.....	8
Summary.....	11
Chapter 2 - Literature Review .....	13
Dental Hygiene Preparation Programs.....	13
Clinical Competency and Confidence.....	19
Iron Triangle of Health Care.....	28
Access to Care and Cost Containment.....	31
Quality of Care.....	33

Role of Mentorship in Academic Preparation.....	34
Student Peer-Mentorship.....	39
Faculty Mentorship.....	43
Professional Mentorship.....	44
Peer-Tutoring.....	48
Summary.....	50
Chapter 3 - Methodology.....	52
Research Design.....	52
Study Participants.....	54
Data Sources.....	55
Qualitative Data Sources.....	56
Quantitative Data Sources.....	57
Data Collection Procedures.....	55
Data Management and Analysis.....	58
Summary.....	61
Chapter 4 - Results .....	62
Dental Hygiene Program.....	62
Mentoring Activities in the Dental Hygiene Program.....	66
General Mentorship.....	66
Sharing Patient Names and Information.....	69
Professional Mentorship.....	72
Peer Tutoring.....	73

Cohort Statistics.....	74
Cohort Experiences of Mentoring Activities.....	76
Class 2012.....	76
Class 2014.....	89
Class 2015.....	104
Summary of Mentoring Activities.....	120
Chapter 5 - Discussion and Conclusion.....	125
Methodology.....	125
Discussion.....	126
Improved Educational Experiences.....	126
Confidence to Practice Dental Hygiene.....	127
Implications for Practice.....	128
Recommendations for Future Research.....	130
Conclusion.....	130
References .....	132
Appendix A.....	141
Appendix B .....	143
Appendix C .....	146
Appendix D .....	150
Appendix E.....	152
Appendix F .....	155
Appendix G .....	157

Appendix H .....	158
Appendix I .....	160
Appendix J .....	161
Appendix K .....	163
Appendix L .....	164



**List of Tables**

Table 1. Two Year Course Sequence.....	66
Table 2. Persistence with Cohort and Test Scores.....	75
Table 3. Student Demographics.....	76

## List of Figures

Figure 1. Big Buddy/Little Buddy Mentoring was a Critical Component of my Dental Hygiene Program.....	78
Figure 2. Mentorship and Confidence to Enter Professional Practice.....	80
Figure 3. Mentorship and Confidence to Work in a Health-Care Team.....	83
Figure 4. Mentorship and Learning in the Classroom.....	85
Figure 5. Mentorship and Stress Reduction.....	87
Figure 6. Mentorship and Feeling Like a Professional.....	88
Figure 7. Big Buddy/Little Buddy Mentoring was a Critical Component of my Dental Hygiene Program.....	91
Figure 8. Mentorship and Confidence to Enter Professional Practice.....	95
Figure 9. Mentorship and Confidence to Work in a Health-Care Team.....	98
Figure 10. Mentorship and Learning in the Classroom.....	100
Figure 11. Mentorship and Stress Reduction.....	102
Figure 12. Mentorship and Feeling Like a Professional.....	103
Figure 13. Big Buddy/Little Buddy Mentoring was a Critical Component of my Dental Hygiene Program.....	106
Figure 14. Mentorship and Confidence to Enter Professional Practice.....	111
Figure 15. Mentorship and Confidence to Work in a Health-Care Team.....	115
Figure 16. Mentorship and Learning in the Classroom.....	116
Figure 17. Mentorship and Stress Reduction.....	118
Figure 18. Mentorship and Feeling Like a Professional.....	120

## **CHAPTER 1**

### **INTRODUCTION**

Improving the overall quality, competency, and confidence of novice dental hygienists is a goal of dental hygiene programs (American Dental Hygienists' Association, 2015). To accomplish this goal, dental hygiene programs must meet strict academic demands of the Commission of Dental Accreditation (CODA) in relation to six defined educational standards: institutional effectiveness; educational program; administration, faculty, and staff; educational support; health and safety; and patient care services (CODA, 2015). In addition to academic requirements, dental hygiene programs include clinical practice. Clinical practice in the dental hygiene education curriculum includes hands-on education using a competency-based curriculum. Specific competencies in the curriculum are designed to assess an acceptable level of knowledge and skills related to direct patient care (CODA, 2015). Achieving clinical competency is required for a student to graduate. Ultimately, to obtain a state license to practice dental hygiene, a student must graduate from a competency-based accredited program and successfully pass both a written national board exam and a state/regional clinical exam.

Competent dental hygiene graduates have the levels of knowledge, skills, and values required to begin the practice of dental hygiene (CODA, 2015). The five domains of competency a dental hygiene student must obtain include core competencies, health promotion/disease prevention, community health, patient care, and professional growth. Confidence is not a measured skill based on external expectations like competence (Fleckner & Rowe, 2015). Instead, confidence is a self-perceived measurement of an individual's belief in his or her own abilities (Perry, 2011). There is a direct relationship

between competence and confidence; as the competence of a health-care provider increases so does his or her confidence. Inversely, as the confidence of a health-care provider increases so does competence (Perry, 2011).

Although not required as part of accreditation, many dental hygiene programs have incorporated peer-mentorship as a component of the curriculum. Peer-mentorship consists of a more experienced person, the mentor, being paired with a less experienced person, the mentee, for the purpose of achieving a mutually beneficial outcome (Li, Wang, Lin, & Lee, 2010). The underlying purpose of peer-mentorship in dental hygiene preparation programs is to offer a support system to students (Blanchard & Blanchard, 2006; Damon & Phelps, 1989; Furgeson, George, Nesbit, Peterson, & Wilder, 2008; Moore & Kain, 2011; Saito et al., 2010).

Peer-mentorship has been associated with both positive and negative outcomes for mentees and mentors. Advantages for the mentee relate to less anxiety and stress (Sprengel & Job, 2004), improved clinical confidence (Yonge, Myrick, & Furguson, 2011), and improved study skills (Topping & Ehly, 2001). Advantages for the mentor relate to less anxiety and stress (Sprengel & Job, 2004), gratification from the mentorship experience, and obtaining new information from the student mentees (Yonge et al., 2011). Disadvantages for the mentee relate to negative interactions with unwilling and inexperienced mentors (Kalen, Stenfors-Hates, Hylin, Larm, Hindbeck, & Ponzer, 2010). Disadvantages for the mentor relate to conflicting needs from patients and mentees; additionally, mentors often face unclear expectations of their duties (Kalen et al., 2010).

The Iron Triangle of health-care originated with William Kissick in 1994. He studied medical systems worldwide and contended that no population in the world can be provided all of the health-care services needed. He argued that access, cost containment, and quality (each element of the triangle) represent equal priorities in health-care and can be utilized to address deficiencies in needed health-care services. Health-care policy must be fashioned so that the three vertices of the triangle will remain stable and prevent a public health crisis (Kissick, 1994). An intervention such as Interprofessional Education (IPE) is suggested as a strategy to improve quality of care, one of the three vertices in the Iron Triangle of health-care (ADHA, 2015). Interprofessional Education happens when students of two or more professions engage in learning. Berge and Mouradian (2014) argued that dentists of the future will utilize IPE and integrate medicine and dentistry. It was suggested that increased interdisciplinary teamwork can be achieved by placing dental hygienists in medical practices (ADHA, 2015).

### **Statement of the Problem**

The goal of dental hygiene programs is to effectively prepare students to enter professional clinical practice. Dental hygienists must be prepared to treat a variety of patients in both traditional and nontraditional settings. The former U.S. Surgeon General David Satcher, M.D. PhD stated, “Without oral health, you do not have health.” This is a concern because the U.S Department of Health and Human Services (2000) reported only 50% of the population receives dental care. Graduating well prepared dental hygienists is an essential component to public health. The purpose of advancing education in dental

hygiene is to improve both oral health and overall health for more people in the population (ADHA, 2015).

Competence is assessed in many ways during the program. In contrast confidence is a much more difficult construct to measure. A clinician's competence and confidence are directly related. As the competence of a dental hygienist increases so does his or her confidence. Confidence in initial professional practice is a vital element in patient care. Accreditation standards require that students in dental hygiene programs obtain sufficient clinical and didactic education to develop the ability to make appropriate clinical judgements (CODA, 2015). The confidence of dental hygienists influences their clinical judgement and how a patient perceives their abilities (Brame, Martin, Tovac, Stein, & Curran, 2012; Perry, 2011).

Peer mentoring has been added to dental hygiene programs as a means of providing support to students. Advantages and disadvantages have been found. One area that has not been explored is whether serving as a mentor, being a mentee, or both is associated with the benefits of peer-mentorship. Kalen et al. (2010) contended that more research is needed to gain a better understanding of the factors related to successful mentorships. Much of the research about peer-mentorship associated with health-care has been conducted with nursing students. There is a dearth of information about the contribution of peer-mentorship to confidence in initial professional practice. This is particularly salient for dental hygiene programs. Assessment of peer-mentorship in a dental hygiene program can address these voids in the literature.

### **Purpose of the Study and Research Design**

The purpose of this study was to explore the contribution of peer-mentorship in a dental hygiene program to confidence in initial professional practice. This study used a mixed methods research design. Three cohorts of dental hygiene students and the three dental hygiene faculty members who taught the cohorts were recruited to participate in the study. Quantitative data sources included an on-line survey, graduation rates, and test scores. Test scores included the written national board exam and the state/regional clinical exam. Interviews were conducted with select students from each cohort and the three faculty members involved in the dental hygiene program to provide a more nuanced understanding of the role that peer-mentorship played in a student's experiences with confidence in initial professional practice.

### **Background of the Study**

The community college where this study was conducted offered a unique opportunity to examine the contribution of peer-mentorship in a dental hygiene program to confidence in initial professional practice. Since its inception, the two-year program traditionally accepted a new cohort of students every year. Mentoring was intentionally included as an activity of the program. Students in the second-year of the program served as mentors to the first-year students. As a result, all students served in both roles as mentees (first-year) and mentors (second-year). This pairing was referred to as a Big/Little Buddy. The dental hygiene program under study evolved over time. Changes occurred as a result of new ideas, lessons learned, and changing conditions.

The financial crisis that began in approximately 2008 resulted in dramatic reductions in state funding for the community college; serious budget reductions began in 2011. In response to the severe budgetary constraints, the dental hygiene program temporarily transitioned to accepting a new cohort of students every other year, instead of every year. The decision not to accept a cohort of students created the unique situation for two of the cohorts. One cohort matriculated through the program without acting as peer-mentors and another cohort matriculated through the program without receiving peer-mentorship. Student data of these two cohorts were compared with a more typical cohort of students who served as both mentees and mentors. This critical consideration, not to accept a new cohort of students during the fall semester of 2011, left a gap in how the mentoring activities were implemented.

### **Significance of the Study**

This study is significant for two reasons. First, dental hygiene related research is not as robust when compared to other health-care professions. This study adds to the body of knowledge that dental hygiene academic and professional leaders can reference as they make evidence-based decisions for best practice. Second, assessing qualitative data from educators and students offered a unique insight based on lived experience significant to dental hygiene education. Overall, this research study adds to the body of knowledge related to peer-mentorship in one of the allied health fields of study.

### **Limitations**

One limitation of the study, in relation to the cohorts, is that the researcher was an instructor in the dental hygiene program at the same time as one of the cohorts. The



researcher taught second-year students from the 2011 cohort (not included in this study). It is important to clarify that the researcher did not instruct any of the study participants.

Limitations in relation to data collection may include student pairing, participant self-reporting and the survey instruments utilized. Each student mentor-mentee pairing is unique. The dynamics between each pair may have caused variability in data from their unique relationship experiences. For example, some assigned student pairs may have been requested by the mentor because they were friends with an incoming student. This prior friendship may have impacted mentor-mentee interactions and commitment differently than pairs unfamiliar with each other at the start of the relationship. Possible bias may be associated with participants who chose to participate in the study. Furthermore, when study participants self-reported, they may have overstated in order to make their situation seem worse, or they may have understated in order to minimize a situation. Additionally, participants may have mistaken the intent of a question or not remembered with complete accuracy. Limitations associated with using the survey may have included response rates, using close-ended questions that limit responses to only what was provided on the survey and participants may have become bored during completion of the survey, limiting their focus.

Another limitation of this study is the generalizability of the findings. The study was conducted at one institution in the western region of the United States. Likewise, qualitative data offers insight into the lived experiences, but these experiences apply to only the specific students and faculty that participated in this study. Both factors limit the generalizability of the study to the larger population.

## **Delimitations**

To further define the parameters of this research study, specific delimitations were applied. The delimitation boundaries can be explained by addressing why certain literature was not reviewed, why certain populations were not studied, and why specific steps in the methodology were not included. Peer-mentorship in the family environment was not undertaken because this study was specific to peer-mentorship in an academic environment. Vulnerable dental hygiene students were not studied because this was beyond the scope of this research study. Interviews with administration were not included because their lived-experiences related to peer-mentorship at the programmatic level were considered too far removed from the research questions.

This study was delimited to an academic environment at a dental hygiene program in the western region of the United States. The participants were limited to 34 students and three full-time faculty. Quantitative data were limited to an on-line survey and aggregated graduation rates and test scores. Qualitative data were limited to one open-ended question on the survey and telephone interviews with select students and all faculty who taught the three cohorts.

## **Definitions**

For the purpose of this study, the following definitions were applied.

1. An advanced dental therapist is a mid-level oral health provider (ADHA, 2015).

2. Clinical competence includes five domains of competence: core competencies, health promotion/disease prevention, community health, patient care, and professional growth.
3. Co-mentoring exists between two students in the same educational discipline. Co-mentoring consists of a two-way process between a more experienced mentor and a less-experienced mentee (Tourigny & Pulich, 2005).
4. Competencies are written statements describing the levels of knowledge, skills and values expected of graduates (CODA, 2015).
5. Competent dental hygiene graduates have the levels of knowledge, skills and values required by new graduates to begin the practice of dental hygiene (CODA, 2015).
6. Confidence is a self-perceived measurement of an individual's belief in his or her own abilities (Perry, 2011).
7. Dental hygiene student is a student studying to enter the profession of dental hygiene as a licensed professional. Dental hygienists provide oral health-care, local anesthesia for pain control, perform nonsurgical periodontal therapy techniques, and administer local chemotherapeutic agents.
8. Educational standards offer rules as a basis of comparison established in measuring or judging capacity, quantity, quality, content and value; criterion used as a model or pattern (CODA, 2015).

9. Faculty mentors facilitate learning with content that has already been taught. Assessment tools are often associated with faculty student mentorship (Kalen, 2010).
10. Interprofessional Education (IPE) happens when members or students of two or more professions associated with health or social care engage in learning with, from, and about each other (ADHA, 2015).
11. Mentoring refers to a symbolic nurturing and trusted relationship between two people (Botma, Hurter, & Kotze, 2013).
12. Mixed methods research is defined as being in the middle of a continuum between qualitative and quantitative research (Creswell, 2014).
13. Peer-assessment involves observation by students who have the same general level of training to judge the success of their peers work (Tricio et al., 2014).
14. Peer-evaluation assesses the performance of a peer (CODA, 2015).
15. Peer-mentor is a more experienced person, the mentor, paired with a less-experienced person, mentee, for achieving a mutually beneficial outcome (Li et al., 2010).
16. Peer-observation, also known as peer-monitoring, involves observation by students who may or may not have the same general level of training; no judgment is made on the peer's work performance (Topping & Ehly, 2001).
17. Peer-tutoring is described as an approach where one person instructs another person in material on which the first is an expert and the second a novice (Damon & Phelps, 1989).

18. Professional dental hygiene association is the American Dental Hygienists' Association (ADHA). The ADHA's stated aim is to advocate dental hygiene by setting benchmarks for education, licensure, practice, research, and other professional issues on behalf of dental hygienists (ADHA, 2015).
19. Professional mentoring occurs in the same discipline using preceptorship, one-on-one pairing of a student with a licensed professional (Yonge et al., 2011).
20. Program outcomes specific to this study relate to student National Board Dental Hygiene Exam scores and pass/fail rates on state/regional clinical exams.
21. Program review refers to a review of a dental hygiene program to assess educational effectiveness (Nadeau & Tysinger, 2012).
22. Student peer-mentoring occurs in the same educational discipline where second-year students mentor first-year students (Sprengel & Job, 2004). Student peer-mentors do not introduce new information. They facilitate learning related to content that has already been taught (Hryciw, Tangelakis, Supple, & Best, 2013).

### **Summary**

This chapter has introduced the study. It explored peer-mentorship at a dental hygiene program in the western region of the United States. Graduation rates, test scores, surveys and interview data were collected and evaluated to determine the contribution of peer-mentorship related to a student's confidence in initial professional practice. Chapter 2 presents a literature review related to peer-mentors and student mentees. Chapter 3 details

the research methods specific to both the qualitative and quantitative approaches used in this study. Chapter 4 presents the results of the study. Chapter 5 includes the discussion and conclusion.

## **CHAPTER 2**

### **LITERATURE REVIEW**

The year 2013 marked the 100-year anniversary for the profession of dental hygiene. Mullen (2013) detailed the history of Alfred C. Fones, the father of dental hygiene. In 1913 the dentist, Dr. Fones, trained his assistant Irene Newman to treat his patients' oral health needs. Today, with legislation designed to increase access to oral health-care, dental hygienists can work independently from the dentist, provide local anesthesia for pain control, perform nonsurgical periodontal therapy techniques, and administer local chemotherapeutic agents.

The purpose of this study was to explore the contribution of peer-mentorship in a dental hygiene program to confidence in initial professional practice. This chapter provides a review of the literature. It consists of three sections. The first section provides a brief history and a description of dental hygiene preparation programs. The relationship between confidence and competence in professional practice is included in this section. The second section discusses the Iron Triangle of health-care. The third section discusses the role of peer-mentorship in academic preparation. It is further narrowed to address the purpose of peer-mentorship, student peer-mentorship, faculty and professional mentors, and mentorship versus tutoring. The chapter concludes with a brief summary.

#### **Dental Hygiene Preparation Programs**

Dental hygiene educational programs have a rich history. Historically, the first dental hygiene accreditation standards were developed by three groups: the American Dental Hygienists' Association, the National Association of Dental Examiners, and the

American Dental Association's Council on Dental Education. The standards were approved by the American Dental Association (ADA) House of Delegates in 1947 (CODA, 2015). More contemporary educational standards for dental hygiene education programs are now approved by the Commission on Dental Accreditation (CODA). The Commission consists of 30 members, including a representative from the American Dental Hygienists' Association (ADHA), representatives from other disciplines accredited by the Commission, and representatives from the general public. Their mission states, "The Commission on Dental Accreditation serves the oral health-care needs of the public through the development and administration of standards that foster continuous quality improvement of dental and dental related educational programs" (CODA, 2015, p. 4).

Educational standards offer rules to follow when measuring dental hygiene educational programs. Standards have been established to evaluate capacity, quantity, quality, content, and value within a dental hygiene educational program (CODA, 2015). The capacity of a program is associated with sustainable funding and facilities that can accommodate both the academic and clinical needs of students. The quantity of a program is associated with how many students are accepted into the program. Additionally, quantity of a program is associated with the number of faculty needed to maintain the required faculty-to-student ratios. Quality of a program is associated with the academic rigor of the program. Curricular content provided in a dental hygiene program must include general education, biomedical sciences, dental sciences, and dental hygiene science (CODA, 2015). Value within a dental hygiene program relates to



learning acceptable ethical behaviors and practices of health-care professionals. Assessing learned values of dental hygiene students is a consistent requirement throughout the educational standards.

The dental hygiene educational standards are organized in six categories. The categories are: institutional effectiveness; educational program; administration, faculty, and staff; education support services; health and safety; and patient care services. Standards were developed to protect the public's welfare, serve as a guide for dental hygiene program development, serve as a stimulus for the improvement of established programs, and provide criteria for the evaluation of new and established programs (CODA, 2015).

Dental hygiene programs prepare students to assume six professional roles as dental hygienists. These roles include clinician, educator, researcher, administrator/manager, advocate, and public health professional. Dental hygiene preparation programs offer undergraduate and graduate degree options; degree attainment is associated with the professional role a dental hygienist holds. A clinician must hold a minimum of an associate degree, which is generally earned in a two-year community college setting (CODA, 2015). A baccalaureate degree, generally awarded at a four-year college or university, but also at select two-year community colleges (Portillo, Rogo, Callry & Cellucci, 2013), opens opportunities for employment outside of the clinical dental hygiene role such as an educator or researcher. Post-graduate level dental hygiene degree options are also available. Select universities offer a master's degree in dental hygiene (Darby, 2004). A master's degree in dental hygiene prepares dental hygienists

for academic, professional, and management roles (Hedi & Kinney, 1978; Ortega & Walsh, 2014). Ortega and Walsh (2014) project a doctorate in dental hygiene as a parallel to the Doctorate of Nurse Practice (DNP). Wilkins (2013) reported that the role of public health is an integrated component of all the professional roles of a dental hygienist.

Additionally, a dental hygienist can earn an advanced practice license (ADHA, 2015; Driscoll, Fottler, Liberman, Pitts, & Wan, 2011). Depending on the specific state regulatory requirements, licensure may be obtained through either earning a post-graduate degree or taking continuing education courses (ADHA, 2015; Goldie, 2012). Minnesota offers an advanced dental therapists license (ADHA, 2015). California offers an alternative practice license (ADHA, 2015). Nevada offers a public health endorsement (ADHA, 2015). Kansas and Oregon offer expanded care/practice permits (ADHA, 2015). A dental hygienist with an expanded permit, public health endorsement or advanced practice license normally focuses his or her efforts towards serving vulnerable populations in need of oral health-care (Driscoll et al., 2011). Advanced/alternative practice allows dental hygienists to work independently from a dentist; they can perform duties outside the scope of a regular dental hygienist and can own their own businesses (Driscoll et al., 2011).

Before entering into a dental hygiene preparation program, a student must complete prerequisite coursework in general education and biomedical science. General education content must include oral and written communications, psychology, and sociology (CODA, 2015). Biomedical science content must include anatomy, physiology, chemistry, biochemistry, microbiology, immunology, general pathology and/or

pathophysiology, nutrition, and pharmacology (CODA, 2015). To achieve this prerequisite coursework, students take approximately ten classes before entering either an associate or baccalaureate dental hygiene program.

Academic rigor is a key component of all dental hygiene preparation programs. The curriculum in a dental hygiene preparation program must include at least two academic years of full-time instruction, or its equivalent, at the postsecondary level (CODA, 2015). Program components must include dental sciences and dental hygiene science (CODA, 2015). Dental science content provides a student with knowledge of oral health and disease designed to prepare a clinician to assess, plan, and implement dental hygiene patient care. Dental science curriculum includes tooth morphology, head and neck anatomy, oral anatomy, oral embryology and histology, oral pathology, radiography, periodontology, pain management, and dental materials (CODA, 2015). Dental hygiene science content provides a student with knowledge of dental hygiene patient care to prepare a clinician to act as an integral member of a health-care team. Dental hygiene science curriculum includes ten categories. The categories are oral health education and preventive counseling, health promotion, patient management, clinical dental hygiene, provision of services for the management of patients with special needs, community dental/oral health, medical and dental emergencies, legal and ethical aspects of dental hygiene practice, infection and hazard control management, and provisions of oral health-care services to patients with blood borne infectious diseases (CODA, 2015).

Professionalism is another key component of dental hygiene programs; there is an emphasis placed on professionalism throughout a dental hygiene curriculum (Blue,

2013). Curriculum includes didactic learning as well as clinical learning that involves treating patients. Didactic courses include problem-based learning that can be challenging for some students. Learning in a clinical environment while treating patients creates the opportunity for collaborative learning for optimal patient care (Blue, 2013; Goldie, 2012; Moore & Kain, 2011; Saito et al., 2010). An example of collaborative learning in the health-care environment includes dental and medical students working together on patient care (Blue, 2013).

Stress in an academic environment is common to many disciplines. Dental hygiene students face stress both in their didactic and the clinical learning environments. Saito et al. (2010) studied dental hygiene student perceptions of their learning environment through survey methods. Dental hygiene students participated in a four-year program evaluation study from 2005-2008. A total of 402 surveys were returned over the course of the study. Saito et al. implemented interventions designed to improve the learning environment. They included intranet access, reorganizing the faculty, a student support center, decreased student enrollment, and increased clinic training. Improved intranet access was designed to facilitate communication between students and faculty. In the clinical setting, students were notified in advance which faculty would be working with them. A student support center, including school counselors, was established to allow students easier access to support services. Student enrollment was downsized providing smaller cohort sizes. Lastly, students were provided with additional clinical instruction hours, providing more time-on-task related to patient care. It was concluded

that stress in dental hygiene programs could be reduced through the inclusion of these specific activities.

**Clinical competency and confidence.** The Commission of Dental Accreditation requires that dental hygiene students graduate from an accredited school with an approved competency-based curriculum (CODA, 2015). Clinical, hands-on education is assessed based upon a competency-based curriculum; competencies are designed to “assess an acceptable level of knowledge and skill related to patient care” (CODA, 2015, p.22). The five domains of competency a dental hygiene student must obtain include core competencies, health promotion/disease prevention, community health, patient care, and professional growth. Clinical competency is assessed in various areas of patient care. One example is the ability to work with patients of different ages. Graduates must be competent in providing dental hygiene care for a child, adolescent, adult, and geriatric patient (CODA, 2015).

Dental hygienists have traditionally been taught to work as a key member of an oral health-care team (Preshaw, 2015). This entails dental professionals, such as a dentist, dental assistant, and dental hygienist working together in patient care. The dental hygiene accreditation standard 2-15 includes competency-based interprofessional health-care team experiences (ADHA, 2015). This requires dental hygiene students to learn how to communicate and collaborate in a health-care team with other health-care professionals. The dental hygiene science curriculum is designed to prepare a dental hygienist to work as an integral member of an interdisciplinary health-care team (ADHA, 2015). Interprofessional teamwork as a dental hygiene student is designed to instill value and

provide experience with this interdisciplinary skill needed to treat patients (Institute of Medicine, 2001).

Dental hygiene preparation programs must graduate competent students that have the level of knowledge and skills required to begin the practice of dental hygiene when they enter the workforce (CODA, 2015). Knowledge needed to pass the written National Board Dental Hygiene Exam is obtained through the prerequisite and program components of a CODA approved curriculum. Clinical skills are integrated throughout the two-years of the dental hygiene program. Students must achieve the required clinical competencies to earn a degree and pass a state/regional clinical exam to become licensed (CODA, 2015).

Traditionally, clinical competence is determined by a one-time clinical exam approved by the National Testing Agency. A live patient is used in the one-time clinical exam. Concerns have been raised regarding ethical issues with testing on a live patient; this is compounded by increasing difficulty identifying patients who meet the clinical criteria of state and regional exams. Fleckner and Rowe (2015) conducted a national survey of dental hygiene program directors to gain a better understanding of alternate assessments of clinical competence as a qualification for initial dental hygiene licensure. The majority of survey respondents indicated that the one-time clinical exam has low validity in reflecting the complex responsibilities of the dental hygienist in practice. Respondents contended that graduation from an accredited school, along with passing a written national board exam is a sufficient measure to assess clinical competency for initial licensure. It was concluded that the emphasis for initial licensure of a student

should be based on performance throughout the program, instead of a one-time clinical examination.

There are a variety of clinical assessments used to assess the competence of health-care professionals. Navickis et al. (2010) presented that Standardized Clinical Assessment Techniques (SCAT) include: Objective Structured Clinical Exams (OSCE), Standardized Patient (SP) exams, simulation, Triple-Jump Exercises (TJE), and Second-year Exit Exams (SEE). Objective Structured Clinical Exams are timed, use patients with similar health issues, are interactive, and are designed to allow students to have similar experiences. Standardized Patient exams allow for the patient to be: a student, instructor, or real patient. A script is used by the patient, and students must be able to solve potential problems in treatment. The goal of this assessment method is to allow students to have similar patient experiences. Simulation assessments use mannequins that present with conditions. The advantage of this method is that no live patients are used. This allows for students to have similar patient experiences. Triple-Jump Exercises involve a three-part oral examination. First students are presented with a patient problem. Second students are allowed to research possible solutions to the problem. Third, students must synthesize what they have learned and answer orally how they would address the problem presented. This also allows students to have similar patient experiences. Second-year Exit Exams can include one or more of the SCAT and are often referred to in dental hygiene programs as Mock Boards. Fleckner and Rowe (2015) indicated that dental hygiene programs in Minnesota conduct OSCE consisting of non-patient computer-based

simulation. This exam utilizes computer-generated patient-cases with medical and dental histories, radiographs, study models, and patient records.

The validity and reliability of OSCE has been determined. The clinical competence of medical students is traditionally assessed through both multiple-choice examinations and hands-on tests. The hands-on tests include patient variability similar to the current one-time live patient clinical exam dental hygiene that students face. Gilson et al. (1998) studied the feasibility of OSCEs with third-year medical students. Students rotated through six stations to assess a variety of relevant medical issues that may be faced as a practicing clinician. A non-standardized patient was used at one station; standardized patients were used at the other five stations. The standardized patients were used to reduce patient variability and provide students with similar patient experiences. The use of standardized patients produced statistically significant mean scores at each station when participant scores were compared station by station. There was a low correlation, with .001 significance, between OSCE scores and traditional written examination scores. It was suggested that the OSCE and traditional examinations do not measure the same domain of student ability. There were 13 students that received outstanding OSCE scores. Only 5 of these 13 students received a written examination score above the 95<sup>th</sup> percentile. Eleven of the 13 students received an overall outstanding faculty evaluation from the 6 patient stations. Reliability was determined by consistency of OSCE performance. Validity was determined by comparing student OSCE performance with faculty evaluations. It was concluded that OSCE is a reliable and valid test for clinical competence.



Specific aspects related to clinical competence in health-care include empathy, ethical competence, and cultural competence. Ogle, Bushnell, and Caputi (2013) studied the relationship between empathy and clinical competence. Fifty-seven medical students participated in the study. Clinical competency was measured during an OSCE. Empathy was rated by both an independent observer and by the student participants using a Jefferson Scale. The Jefferson Scale of physician empathy is comprised of twenty questions that measure empathy related to specific medical care. Independent observers found a strong association with clinical competency and empathy. Additionally, observed empathy was associated with the patients' ratings of student performance during the clinical exam. In contrast, self-rated empathy was not associated with clinical competence. Students who rated themselves high in empathy were found to have lower competency scores.

Ethical competence is often regarded as part of the broader competence required of all health-care professionals (Davis, 2002). Eriksson, Helgesson, and Huglund (2007) conducted a systematic review of the literature to determine the role of ethical guidelines in the process of gaining ethical competence among health-care professionals. Ethical codes, guidelines, and laws play a role in building ethical competence among health-care professionals. Inconsistencies were noted between common practice and professional ethical codes set by each profession. Oaths and ethical guidelines set by health-care professions varied, resulting in a multiplicity of ethical guidelines. These inconsistencies become relevant as interdisciplinary teams work together on patient care. Ethical concerns have the potential for litigation. Many health professions are self-regulated,

resulting in negative litigation consequences. For example, individuals involved in the self-regulation process may not be competent enough to correctly interpret complex regulations. Education and training in ethics is one method used to support professionals in handling ethical dilemmas (Sporrong, Arnetz, Hansson, Westerholm, & Hoglund, 2007).

As the United States becomes more diversified with increased racial and ethnic diversity, health-care professionals are encouraged to move from being culturally diverse to obtaining cultural competence (Castillo, & Guo, 2011; Galambos, 2003). Galambos (2003) argued that health-care professionals are bound by their code of ethics to be responsive to cultural diversity. For example, African Americans tend to be underrepresented in utilizing health services while health disparities are prevalent. One explanation of this is that culturally diverse groups experience services that are culturally insensitive and that formalized services designed to target specific disenfranchised groups are inappropriate. Traditionally, cultural competence has been strictly fact-based. The Cultural Competence Attainment Model, developed by McPhatter (1997), reflects a more comprehensive developmental model, encompassing not just learning facts about a culture but learning about a culture through thinking, feeling, sensing, and personal behavior.

***Clinical confidence.*** Clinical competence encompasses all five domains of competency and is assessed throughout the CODA standards. Confidence is not a measured skill based on external expectations like competence (Fleckner & Rowe, 2015). Instead, confidence is a self-perceived measurement of individuals' beliefs in their own

abilities (Perry, 2011). There is a correlation between competence and confidence. Clinical confidence can be improved with clinical competency achievement (Perry, 2011; Simonian, Brame, Hunt, & Wilder, 2015). Clanton, Gardner, Cheung, Mellert, Evancho-Chapman and George (2014) studied the relationship between confidence and competence with the development of surgical skills among medical students undergoing surgical training. Over a two-year period, 150 medical students participated in a surgical skill training workshop. Confidence surveys were completed by student participants, before and after the workshop. Students reported improved confidence after training and demonstration of competence in the skill.

Morgan and Cleave-Hogg (2002) studied clinical experiences and students' levels of confidence in their abilities to manage patient problems. Twenty-five clinical experiences were included in a questionnaire designed with a 5-point Likert-scale; 1 was designated as novice, while 5 was designated as expert. One hundred and forty-four final year medical students participated in a one-day training session. Simulation mannequins were utilized to mimic patient medical emergency situations. Pre and post questionnaire analysis revealed a good correlation between clinical experience to gain competency and level of confidence. There was no correlation between levels of confidence and clinical grades, however.

A correlation between confidence and competence with regards to clinical patient care has been identified with nursing students. Perry (2011) conducted a systematic review of the literature to provide clarity of the concept of self-confidence from education using Human Patient Simulation (HPS). Perry presented confidence as a

multi/bi-directional cycle. Confidence was associated with attributes of the learner and teacher, moderating factors of the environment, and influential factors of self-efficacy. Specifically, previous experiences by a student, coupled with a teacher's reinforcement, had the potential to either negatively or positively influence the learner's confidence. Additionally, student attributes that influenced confidence included their physical, emotional, spiritual state, as well as their self-esteem. An individual's intrinsic and extrinsic locus of control was reported as a moderating factor that influenced a learner's confidence. This included the extent to which students believed they had power over the events in their learning. Factors of self-efficacy that influenced a learner's confidence included successful performance, vicarious experiences, and verbal persuasion from a teacher such as praise and encouragement. Successful performance, realized through the ability to execute required clinical actions, resulted in competent learners feeling more confident.

Perry (2011) utilized fictional case models to demonstrate varied levels of confidence. He applied antecedents of the learner, moderating factors of the environment, and influential factors of self-efficacy to three cases affecting the confidence level of nursing students. A compromised vitals assessment case-scenario was used to depict how a confident, borderline confident, and unconfident nursing student would perform during patient care. A confident student would instantly know after assessment of the vitals that the patient needed immediate oxygen and reassessment. A borderline confident student would record the vitals and locate the instructor for guidance. An unconfident student would have to be prodded into the clinical setting and require the instructor to be by his

or her side the entire time of vitals assessment. It was suggested that if nursing educators understood a student's development of confidence and their role in developing confident nurses, then educators could better develop competent practitioners. Human Patient Simulation was suggested as a method of learning to develop self-confidence in nursing students which then could support competence during patient care delivery.

A correlation between confidence and competence with regards to clinical patient care has also been identified with dental hygiene students. A study was conducted by Simonian et al. (2015) to determine the effects of a three-week practicum experience on the clinical confidence of second-year dental hygiene students. A mixed methods research design was utilized. Thirty-two students participated by completing a survey based on the dental hygiene process of care. A Likert-scale was used ranging from "not at all confident" to "totally confident" in order to capture quantitative data. Students also submitted reflective journal entries discussing critical incidences during their practicum experience in order to capture qualitative data. Statistical significance was found with pre to post practicum self-reported clinical confidence. It was concluded that competence gained from a three-week dental hygiene practicum experience increased clinical self-confidence of the students.

Various interventions have been applied to increase the confidence of a health-care professional. Interprofessional Education (IPE) was used by Herring et al. (2013) as a tool to increase the confidence of health-care professionals who were caring for patients with diabetes. The interdisciplinary team that received IPE included pharmacists, nurses, health-care assistance, and doctors. A diabetes specialist facilitated eight-hour education

programs at four hospitals. The program included education related to self-management of diabetes, recognition of treatment of hypoglycemia, indications for an intravenous insulin infusion and how to prevent insulin errors. Members of the interdisciplinary team completed questionnaires before and after the training sessions. Findings suggested that the confidence of health-care professionals to deliver diabetes care increased after participating in the IPE training session.

Standardized Patient Scenarios (SPS) were used as an intervention to study if SPS can increase the confidence of dental hygiene students to provide tobacco dependence counseling. Brame et al. (2012) utilized a two-parallel group randomized research design to compare the confidence of students who received SPS to the confidence of students who did not receive SPS. The SPS sessions consisted of professional actors who were trained to portray patients in scenarios specific to tobacco dependence. Students obtained training before the SPS acting sessions, followed by debriefing sessions. Statistical significance was found with increased confidence following SPS.

### **Iron Triangle of Health Care**

The concept of the Iron Triangle originated with William Kissick, a medical doctor and professor of medicine, at the University of Pennsylvania. Kissick (1994) studied medical systems worldwide and argued that no population in the world can be provided all of the health-care services needed. Insufficient resources play a major role in the world-wide public health crisis. He proposed the original Iron Triangle, consisting of access, cost containment, and quality. Each element of the triangle represents identical priorities in health-care. Kissick stressed that no health-care reform can provide a perfect

solution. Health-care policy must be fashioned so that the three vertices of the triangle, designed to hold up the health-care delivery system, will remain stable and prevent a public health crisis. Interventions should be implemented based on an understanding of regional needs, expectations, and cultural diversity. Concern about the Iron Triangle has been related to the fact that it is a self-reinforcing system of three vertices (access, quality, and cost). Inherently the improvement in two vertices results in a worsening of the third. Interventions in health-care require trade-offs, which prevent simultaneous improvement in all three vertices (Lehman, 2015).

Subsequently, another concept designed to improve health-care in the United States was designed. In 2008, researchers from the Institute of Health-care Improvement recruited 141 organizations worldwide. Participants were from organizations including health-care systems, hospitals, health-care insurance companies, public health agencies, social services groups, and community coalitions. This collaborative provided a structure for observational research leading to the concept of the Triple Aim intended to simultaneously improve the experience of care, improve the health of populations, and reduce the per capita costs of care (Whittington, Nolan, Lewis, & Torres, 2015). Similar to the Iron Triangle, Triple Aim is considered advantageous because all three dimensions are considered at once when the concept is used during health-care reform.

Political influences have also been linked to improving health-care in the United States. Peterson (1993) indicated that the political context for health-care reform includes the status of the health-care system and the public's attitude associated with health-care reform. During the George H. W. Bush administration, from 1989 to 1993, less than 20%

of voters ranked health-care reform as an important issue. There was a political shift in the public's attitude associated with health-care reform during the William J. Clinton administration. Peterson identified that 67% of voters in 1992 ranked health-care reform as one of the most important issues in the country. The public's attitude about health-care reform during the 1990's was a driving force for the use of the Iron Triangle concept. Politicians assessed interventions related to access, cost containment, and quality in an effort to meet the public's demand for reform. Under the George W. Bush administration, during the early 2000, the public continued to place importance on health-care reform. President Bush implemented efforts to increase coverage affordability addressing cost in the Iron Triangle. For example, he offered a tax credit to help low income families purchase health-care (Bush, 2004). The public's attitude about health-care reform during the Barack Obama administration continued with the political importance of health-care reform related to access (Lehman, 2015).

The Affordable Care Act (ACA) was passed under the Obama administration. Lehman (2015) indicated that the goal of the ACA was to increase access to health-care. Both the Iron Triangle and Triple Aim became part of the national strategy when the United States implemented the Affordable Care Act in 2010 (Whittington et al., 2015). The ACA sought to increase health-care access through four mechanisms: mandating that all Americans obtain health insurance; expanding Medicaid to individuals earning less than the federal poverty level; requiring that employers with 50 or more employees provide adequate health insurance; and preventing insurers from denying coverage based on preexisting medical conditions (Lehman, 2015).



Edelstein (1999) associated pediatric dentistry with the Iron Triangle of health-care. He discussed that, while pediatric dental practices are designed to serve children in need of oral health-care, they are also businesses that require profitability to survive. Edelstein argued that the profitability constraints faced by pediatric dental offices are contrary to the cost, access, and quality virtues of the Iron Triangle. Edelstein stressed the importance of embracing the Iron Triangle philosophy, based on the fact that dentistry is an important part of the public health-care system. He argued that public funding provided to pediatric dental offices would increase access to dental care for underserved children. He encouraged greater public funding for pediatric dentist as a means of maximizing efforts for children and maintaining a profitable enterprise.

The triangle of access, cost containment, and quality are applied in the profession of dental hygiene as well. Strategies have been implemented to address all three critical health-care issues associated with the triangle. Access and cost containment specific to oral health-care are being achieved through an alternative medicine model called teledentistry. Quality of oral health-care is assured through competency based Interprofessional Education (IPE). Uniting multi-disciplinary health-care professionals, while treating a patient's oral health-care needs, increases the quality of care provided.

**Access to Care and Cost Containment.** Telemedicine has been utilized to raise the Iron Triangle of health-care to new heights (Smolensky, 2003). Telemedicine allows for individuals in remote areas to access medical services through information and communication technology. A medical doctor can receive assessments from a qualified

health-care professional in the field and make a diagnosis for treatment. There is no face-to-face contact; rather, interactions are achieved through technology such as video.

Telemedicine paved the way for teledentistry (Daniel & Kumar, 2014). Similar to telemedicine, oral health-care is delivered from across distances. It includes consultation, education, and public health awareness. In addition to video conferencing, teledentistry utilizes storing and forwarding digitized data, pictures, and video for non-realtime consultation. Rural and underserved areas in the United States have benefited from this access to care intervention. Early programs were implemented in Alaska. A Dental Health Aid Therapist worked collaboratively with a cross-distance dentist to deliver treatment consultation, diagnosis, and referral. Indeed, teledentistry is increasing access to care.

Access to dental hygiene care is being addressed by increasing direct access for vulnerable populations (AHDA, 2015). One way is by using technology to create virtual dental offices designed to provide oral health services to those in need. Teledentistry and dental hygiene have combined their efforts to increase access to oral health-care (Summerfelt, 2011). In 2004, the Arizona Legislature passed a bill that allowed qualified alternative practice dental hygienists to provide dental hygiene services without supervision by a dentist. Alternative practice dental hygienists are required to consult with a dentist in questionable patient cases. California initiated the Virtual Dental Home Project. The A. Dugoni School of Dentistry, at the University of the Pacific, developed a community-based delivery system in which underserved individuals receive preventive and simple therapeutic services. Registered Dental Hygienists in Alternative Practice

(RDHAP) obtain an additional scope of practice that legally allows them to work on the Virtual Dental Home Project. Nevada utilizes a Dental Public Health Endorsement to increase access to oral health-care for underserved individuals. The Future Smiles project in Nevada delivers preventive services that include oral-health screenings, fluoride varnish, and digital x-rays in underserved community and school-based settings. South Carolina launched a health promotion specialist program designed to bring dental hygienists to school children in low-income targeted school districts.

As teledentistry continues to be implemented across the nation, ADHA (2015) argued that educational programs must progress at the same rate to deliver students into the workforce that meet the current public health needs. Cooper and Engeswick (2007) studied the confidence of dental hygiene students related to teledentistry. Twenty-five students participated in the study. Pre and post surveys were collected in a course on teledentistry. It was concluded that dental hygiene students had a positive change in confidence related to acquiring and submitting electronic dental images from participation in the course.

In relation to cost containment, Mouradian, Lewis, and Berg (2014) presented that dentistry uses the Triple Aim health-care reform approach. One of the three dimensions of Triple Aim includes reducing per capita costs of health-care. Dentistry bundles payments for a more cost-efficient health-care system.

**Quality of Care.** The Institute of Medicine (2001) identified three voids in the quality of health-care of which oral health is part. First, technology used in health-care has advanced at an unprecedented rate. This rapid technological advancement puts the

quality of health-care at risk if health-care providers are not able to keep up with technological advancements. Second, Americans are living longer which requires health-care professionals to address more chronic conditions. Quality may be compromised due to the fact that the United States health-care system is primarily designed to deliver acute, episodic care. Third, the health-care system is poorly organized with health-care professionals working in silos rather than as interdisciplinary teams.

Interprofessional Education is suggested as one strategy to improve quality of care in the Iron Triangle of health-care (ADHA, 2015). Dental hygiene students now receive IPE as a CODA requirement. Interdisciplinary teams are encouraged among medical and dental professionals (ADHA, 2015). Berge and Mouradian (2014) argued that dentists of the future will integrate medicine and dentistry. Their position paper triangulated the recommendations of the 2011 Institute of Medicine (IOM) report, the general dentist CODA standards, and the CODA standards areas of interest. All three reports included the requirement of interprofessional communication. It was suggested that increased interdisciplinary teamwork can be achieved by placing dental hygienists in medical practices (ADHA, 2015).

### **Role of Mentorship in Academic Preparation**

Mentorship refers to a symbolic nurturing and trusted relationship between two people (Botma et al., 2013). Mentorship has been studied both in academic and workplace environments. In an academic environment, peer-mentorship has been utilized to reduce stress and facilitate adaptation to change (Singh, Singh, & Dhaliwal, 2014). In a professional environment, the primary purpose of mentorship is to develop skills and

competencies designed to increase knowledge related to workplace policies, procedures, and standards (Tourigny & Pulich, 2005).

The overall purpose of mentorship in an academic environment is to improve student outcomes. Improved student outcomes can be achieved through social support (Touringny & Pulich, 2005), reducing stress (Hryciw et al., 2013; Li et al., 2010), encouraging participation in professional associations (Furgeson et al. 2008), providing feedback (Blachard & Blanchard, 2006; Clynes & Rafferty, 2008), and aiding students when they transition into the workforce (Furgeson et al., 2008; Touringny & Pulich, 2005). Role modeling and counseling also aid in positive student outcomes (Hawkins & Fontenot, 2010; Touringny & Pulich, 2005). Although mentoring among students is understood to be beneficial, it typically is not a formalized component of dental hygiene programs. The CODA standards do not prescribe peer-mentorship as an accreditation requirement. Blanchard and Blanchard (2006) suggested that one reason for the absence of this requirement is that mentoring programs tend to lack formal structure.

Mentorship can be either a formal or an informal process (Tourigny & Pulich, 2005). Touringny and Pulich recommended that formal mentorship programs utilize four mentoring strategies. Programs should match the mentor and the mentee, provide an orientation, state the responsibilities of the mentor and mentee, and establish a duration and time commitment. The last two recommendations could be incorporated into a contract detailing the mentorship program guidelines, which should be provided to the mentor/mentee pair. Touringny and Pulich explained that hierarchical relationships, in which mentors are the superior of a mentee, should not be utilized. Additionally, often

mentors receive recognition for their participation. Finally, it was recommended that the effectiveness of a mentorship program should be regularly analyzed and the program modified based on the findings.

In contrast to a formal process, Touringny and Pulich (2005) presented that informal mentorship utilizes an unstructured format and that the relationship usually lasts longer than formal applications. Additionally, the roles of the mentor and mentee are more dependent on the needs of each individual rather than the needs of the program. Informal mentoring can be either hierarchical or among peers. An example of a hierarchical mentorship relationship is interaction between a teacher and a student. An example of a peer-mentorship relationship is interaction between two students.

Informal mentoring lacks clearly stated objectives. This presents unique challenges in a structured setting. Ideally, mentors can promote existing program policies; at the same time, lack of formality can result in the promotion of workplace norms which may not align with policies (Touringny & Pulich, 2005). As a result, informal mentoring may run the risk of utilizing mentorship that places the mentee at a disadvantage or in a compromised position (Touringny & Pulich, 2005). Additionally, peer-mentorship may produce only good feelings among peers, simply aiding in friendship development as opposed to academic and professional development (Jacobi, 1991; Budge, 2006).

When considering the role of mentorship in academic preparation programs, a risk to benefit ratio should be considered. Mentees reported positive experiences related to decreased stress and reduced anxiety. Yonge et al. (2011) argued that mentors are needed

to decrease anxiety and build both the confidence and self-esteem of students. A four-phase study was conducted by Yonge et al. with regard to professional nurse mentors in a rural setting. Nursing students were given an option to conduct their hospital rotation in a rural setting as opposed to a hospital in an urban setting. Using a qualitative interview technique revealed that students perceived advantages related to rural settings having a relatively low number of students present when compared to urban hospitals. Primarily, this offered a more personalized mentorship experience because there were fewer students at a rotation. Although of lesser importance to mentees because living in a rural setting was reported to be undesirable, rural hospitals often offer employment to new graduates who are willing to relocate.

Sprenkle and Job (2004) indicated that peer-mentoring increased learning by reducing stress and anxiety. A peer-mentorship project was developed to place freshman nursing students with sophomore medical students in a clinical setting. The mentor-mentee teams provided patient care, administered patient medications, and made rounds with physicians. It was found that this peer-mentorship approach resulted in freshman nursing students having reduced anxiety with their first hospital experience. Increased learning was also found with regard to clinical patient care.

Li et al. (2010) addressed advantages of peer-mentorship in the clinical setting. Forty-nine nursing students were enrolled in the study. The experimental group paired 17 professional nurse peer-mentors, who were working towards an advanced degree, with 17 first-year-level undergraduate nursing student mentees. The control group consisted of 32 first-year-level undergraduate nursing students with no medical or surgical practice

experience. A Perceived Stress Scale was utilized to rank self-reported stress levels. Zero was the lowest rank representing no stress, while five was the highest rank representing very stressful. Statistical significance with stress reduction from peer-mentoring in clinical practice was found related to: patient care; teachers and nursing staff; peers and daily life; lack of professional knowledge and skills; and environment. Reduced stress was not found to be significant with regard to school assignments and workload. It was concluded that peer-mentoring reduced stress among nursing student mentees in clinic practice education (Li et al., 2010).

In contrast to the stress reduction advantages identified above, Botma et al. (2013) noted specific disadvantages related to peer-mentorship in the clinical setting. Disadvantages related to inexperienced professional practitioners and peer-mentors who were unwilling to assist mentees. Peer-mentors in the hospital environments faced units being understaffed at workstations and patients needing care during peer-mentor clinical rotations. Mentors held high performance expectations from the mentee so their job duties were not interrupted. This level of performance expectation was reported to be stressful for the mentees. Furthermore, mentees felt like the mentoring process took time away from patient care and reported feeling afraid that their lack of knowledge and skill may be bothersome to their assigned mentor (Botma et al., 2013).

Additionally, Botma et al. (2013) identified communication barriers between the nursing faculty at the sponsoring academic institution and staff at the receiving clinical setting. Mentors at clinical rotation settings needed feedback on their mentoring skills in order to provide effective peer-mentoring. Mentees were found to have high expectations



of their mentors, which presented a particular challenge. Poor communication was found between mentors and the nursing faculty at the academic institutions. This lack of communication was found to be challenging to mitigate and contributed to poor mentoring experiences for both the mentors and mentees.

Overall, Botma et al. (2013) identified that mentees face three primary barriers with peer-mentors. First, some mentors were ineffective due to an insufficient level of clinical experience. Second, mentors did not have time for mentees because they needed to address patient care needs during clinical rotations which in turn took the focus away from the mentee. Third, communication barriers between the academic institution and clinical rotation site posed challenging barriers for mentees. These barriers produced stress and dissatisfaction for the mentee.

Time away from patients was also an issue for the mentors in a study of medical students conducted by Kalen et al. (2010). Timing related specifically to mentors needing to handle patient care needs first. In addition to the disadvantage of timing, logistics, and personal chemistry issues between mentors and mentees was identified as an issue. Incompatible personal chemistry related to personalities between the mentor and the mentee were cited (Kalen et al., 2010). These timing and personal chemistry issues caused mentees to experience stress and dissatisfaction with the mentorship relationship.

**Student Peer-Mentorship.** Four types of student-to-student relationships are found in the literature: peer-mentoring, co-mentoring, peer-assessment, and peer-observation. Each will be described, followed by a more focused review of clinical peer-mentoring. Peer-mentors in an academic setting are in the same educational discipline as

the peer-mentee. Pairing is done with a second-year student and a first-year student (Sprengel & Job, 2004). Student peer-mentors do not introduce new information; rather, they facilitate learning related to content that has already been taught (Hyciw et al., 2013). Student peer-mentors aid in the academic process by facilitating learning, increasing student retention, improving learning outcomes both in the academic and clinical environment, modeling, advising, and encouraging professionalism (Blachard & Blanchard, 2006; Hawkins & Fontenot, 2010; Hryciw et al., 2013 Persichilli & Daniels, 2008; Tourigny & Pulich, 2005). Student peer-mentors may assist with one of the capacities identified above or with multiple capacities all at once. Less anxiety and stress in the academic environment were reported as overall benefits for student mentors. Benefits were identified with both improved academic course work and less anxiety and stress in the clinical learning environment (Sprengel & Job, 2004).

Co-mentoring exists between two students, also in the same educational discipline, but it consists of an equal two-way process between a more experienced person, the mentor, and a less experienced person, the mentee (Tourigny & Pulich, 2005). The dynamic of equality is different from student peer-mentorship because it enables the less-experienced student to share current technical skills with the more-experienced student. Challenges may arise with this student co-mentorship relationship. Tourigny and Pulich (2005) described co-mentorship in relation to nursing academic preparation programs. They presented that the more experienced nursing student may feel humiliated by participating in an equal relationship with a less experienced nursing student.

Additionally, a less experienced student may not have the coping skills required to interact with a more experienced student.

Peer-assessment involves observation by students to judge the success of their peer's work (Tricio et al., 2014). Peer-assessment is also referred to as peer-evaluation (CODA, 2015). Both involve a more experienced person, the mentor, evaluating the performance of a less experienced person, the mentee, to critique the mentees performance. With this peer pairing, the mentor has the potential to transition into a supervisory role over the mentee (Topping & Ehly, 2001). Positively, feedback from peers was noted to sometimes be in greater volume and more immediate when compared to faculty feedback (Topping & Ehly, 2001). On the other hand, challenges were noted as peer feedback was normally not critiqued to the same complexity and erred on the side of leniency when compared to a faculty member. For this reason, peer-assessment is often considered substandard to faculty feedback. Nonetheless, higher education is known to utilize peer-assessment with presentations and portfolios (Topping & Ehly, 2001).

Peer-observation, also called peer monitoring, involves observation by individuals who may or may not have the same general level of training. Observers can include peers, teachers, and paraprofessionals. No judgment is made on a peer's work performance but may include both verbal and/or nonverbal feedback (Topping & Ehly, 2001).

***Student clinical peer-mentorship.*** Sprenkel and Job (2004) designed a program to reduce student anxiety by using clinical peer-mentoring during the first hospital experience of a beginning nursing student. Thirty freshman nursing students (i.e., the

mentees) were paired with sophomore medical students, who acted as the mentors in this study. Mentors were asked to be supportive of the learning relationship with their mentee. They were encouraged to be genuine, generous, confident, and competent during their mentorship role. The freshman mentees were asked to meet four clinical objectives on their first hospital visit. They included performing basic nursing skills, reviewing a client chart, observing the mentor's role in the clinical setting, and observing interactions and communications in the hospital setting. Sprengel and Job concluded that student peer-mentoring encouraged greater responsibility and promoted active learning by reducing student anxiety in the clinical learning environment. They also found that student preparation prior to a planned clinical learning experience was improved with the peer dynamic.

Yates, Cunningham, Moyle, and Wollin (1997) conducted a study on student peer-mentorship and clinical learning outcomes among nursing students. Mentors were second-year nursing students; mentees were first-year nursing students. A program was designed to allow mentors to offer guidance and support to mentees in a clinic setting. Mentors were not encouraged to offer tutoring. Five half-hour group sessions were held during a one-semester timeframe. Group sessions for the mentor and mentees were designed to focus on strategies for negotiating the clinical environment. This structured peer-mentorship program encouraged mentees to discuss their observations and experiences in clinic. Review of the program consisted of questionnaires and group sessions. Seven of the eight mentors completed a questionnaire; 26 of the 55 mentees completed a questionnaire designed to assess program effectiveness and the extent to

which the program objectives were met. The results suggested that peer-mentorship in the clinical environment improved learning experiences for nursing students by reducing anxiety and stress.

**Faculty Mentorship.** Mentorship between a faculty member and student consists of a unique relationship. Faculty-mentors aid in the academic process by facilitating learning, discussing future options with students, and providing a support network (Kalen et al., 2010; Singh et al., 2014). Pairing can be between a faculty member and a student at any level in their academic pursuits. Because faculty mentors are in the same educational discipline as the student, they can act as supervisors and assess the performance of the mentee. Assessment tools often are associated with faculty-student mentorship relationships (Kalen et al., 2010).

Singh et al. (2014) conducted a study at the University College of Medical Sciences in India. Faculty-mentors were paired with first-year medical students. It was noted that some of the faculty-mentors held high academic positions in the college. Faculty-mentors were randomly assigned to student mentees. Faculty-mentors were to provide new students with an immediate support network. This was to be achieved through two open house meetings that occurred during the academic year and were facilitated by the coordinator of the mentorship program. Mentors and mentees could also meet on their own as they saw fit. At the end of the academic year, a feedback questionnaire was administered to both the mentors and the mentees. The study revealed that while some students felt supported by their faculty-mentor, many were reluctant to meet with their faculty-mentors. One suggestion from students was to recruit mentors

from second-year medical students with whom they were more likely to share their difficulties than with faculty members (Singh et al., 2014).

**Professional Mentorship.** Mentorship between a professional and student consists of a nurturing and trusted relationship. Professional-mentors are in the same discipline as the student and utilize preceptorship: one-on-one pairing of the student-mentee with a licensed professional (Yonge et al., 2011). Additionally, professional-mentors can act as supervisors and assess the performance of the mentee. Job satisfaction and retention for professionals is the goal of workplace mentorship (Blachard & Blanchard, 2006; Hawkins & Fontenot, 2010; Hryciw et al., 2013; Persichilli & Daniels, 2008; Tourigny & Pulich, 2005). Professional-mentors and student peer-mentors have reported mentoring to be a positive experience. Professional mentors reported that working with mentees was a gratifying experience (Yonge et al., 2011). Additionally, professional-mentors reported the mentor-mentee relationship was advantageous because they learned new information from the students with whom they worked (Li et al., 2010).

The three fundamental psychosocial roles of professional-mentors are counseling, role modeling, and providing feedback to the mentee (Tourigny & Pulich, 2005). First, counseling can be connected to discussing personal concerns with students related to both non-work and work associated issues. Second, role modeling helps mentees identify with their chosen profession. Third, providing positive feedback to students can improve the mentees academic outcomes through positive reinforcement by the mentor (Tourigny & Pulich, 2005). These three roles of a professional-mentor can aid in the academic process of students and impact their transition into the workforce.

Ndwiga et al. (2014) studied mentoring as a strategy for improving the capacity of integrated Sexual Reproductive Health (SRH) and HIV care in Kenya. Twelve mentors working as SRH-HIV providers were paired with twenty-four mentees. Mentors were selected based on their level of knowledge related to family planning and postpartum/postnatal care. Mentees were in training to become SRH service providers. Each pair had on average 100 contact hours over four to six months. The mentor and the mentee worked together to set learning objectives to be addressed during their time together. It was concluded that mentorship enhanced skills, self-confidence, and teamwork in delivering SRH-HIV care among the mentees.

Professional-mentors in the health-care setting provide benefit to the mentee when they are experts in their field and have a willingness to share their experience (Hawkins & Fontenot, 2010; Persichilli & Daniels, 2008). Blanchard and Blanchard (2006) found that mentorship by health-care professionals not only enhanced personal and professional growth of students, but also assisted with job satisfaction and retention of newly graduated students. It was suggested that professional-mentors outside of the academic environment have the capacity to focus on supporting and nurturing students.

Blanchard and Blanchard (2006) studied the prevalence of professional mentoring programs designed to aid in the transition from student to clinical practitioner. The study had a 57% response rate from dental hygiene program directors across the nation. Less than 30% of the dental hygiene programs surveyed used professional mentoring. A lack of formal structure of mentoring programs was found in dental hygiene preparation programs across the nation. Additionally, dental hygiene programs not utilizing

mentorship was due to inadequate time allowed in the curriculum (Blanchard & Blanchard, 2006).

Yeung (2014) suggested that professional-mentors can be utilized to assist mentees with overcoming barriers in research. Professional-mentors can be more motivated than peer-mentors with facilitating successful publication. Yeung also noted the importance of academic program and faculty support of the professional mentor-student relationship. In addition to program benefits from research opportunities, Hryciw et al. (2013) argued that professional-mentors have the potential to increase student retention, improve student learning outcomes, and aid in academic progression.

An increased motivation to learn among nursing student mentees when paired with professional nurses as mentors was identified by Clynes and Rafferty (2008). Formative evaluations were designed to provide students with feedback that would boost their confidence, increase motivation, increase self-esteem, and improve student clinical practice. The feedback was designed to improve the learning experiences of the student without a grade attached. The feedback was considered successful because it encouraged gentle, rather than harsh, communication techniques.

Botma et al. (2013) proposed that clinical experiences for nursing students can be addressed through effective professional mentoring in the clinical environment. Using qualitative methods, their study participants included four registered nurse professional-mentors and 58 third-year undergraduate nursing student mentees. Five effective professional mentoring themes were identified: orientation, organization, process, characteristics, and feedback. Botma et al. suggested that organizational effectiveness



could be improved if all hospital staff members were aware of the mentor/mentee collaborations. Hospitals allowed for student rotations from multiple school sites. Being aware of the arrival of students in general would allow for appropriate scheduling to facilitate positive learning experiences. Botma et al. also suggested that orientation effectiveness could be improved by scheduling student rotation with prior knowledge of what school the students attend. Faculty working at different schools may have slight variations in the expectations of the professional-mentor. Being aware of the school prior to students arriving would allow for mentor preparation to facilitate positive learning. Botma et al. further suggested that the process could be improved through better communication between the mentor and mentee. The use of documented feedback forms was suggested as a process improvement strategy. It was suggested that professional mentorship could be improved if the characteristics of the mentor were appropriate. Recommended characteristics of a suitable professional mentor consisted of an individual who is experienced and willing to share information. The last effective professional mentoring theme identified was feedback to mentors. Mentors wanted to know how well they were fulfilling their role and whether the mentees learned anything from them.

Kalen et al. (2010) conducted a study with eighteen third- and fourth-year medical students who were paired with a volunteer physician for two years. The role of the mentor was to support the medical student and facilitate his or her professional development. It was recommended that the pair meet two or three times each academic term. The study concluded that professional mentorship among medical students enhanced the medical student's professional and personal development.

Li et al. (2010) studied professional mentorship in relation to stress reduction in clinical practice for nursing students. Forty-nine first-year nursing students participated in a surgical rotation. The experimental group consisted of paired registered nurse mentors and first-year nursing student mentees. The role of the mentor was to act as a role model for their mentee when taking care of patients or interacting with co-workers. Psychosocial support was related to listening to complaints by the mentee, sharing pre-clinical practice experience, and providing all-around support. Mentors and mentees were informed that mentors were not to instruct or evaluate the student mentees. It was concluded that professional mentorship could reduce stress in clinical practice for nursing students.

Clynes and Raftery (2008) presented disadvantages for mentors related to workplace logistics for nurses. Professional-mentors in a health-care setting must give priority to patients; this can minimize their work with the mentee. Similarly, Botma et al. (2013) determined that professional-mentors felt stressed when they needed to address their patient's needs while trying to fulfill their mentoring responsibilities. Professional-mentors may also be away from work due to illness, working alternate shifts, or taking leave; each of these disruptions can interrupt their interaction with their assigned mentee. Professional-mentors felt stressed by not being able to adequately assist a mentee when work obligations or logistics took precedence (Botma et al., 2013).

**Peer-Tutoring.** Peer assisted learning (PAL) is the generic term used to describe learning facilitated by non-professional teachers (Topping & Ehly, 2001). One example of PAL is peer-tutoring. Peer-tutoring identifies specific roles for the tutor and the tutee

while focusing on skills to be gained. The tutor, an expert in the material covered, instructs the tutee who is identified as a novice (Damon & Phelps, 1989). Peer-tutoring often focuses on instruction related to curriculum content and both students are from similar areas of interest (Topping & Ehly, 2001).

Topping and Ehly (2001) defined peer-tutoring as an encouraging and supportive one-on-one relationship. The tutor provides the tutee with positive role modeling, praise, positive reinforcement, open-ended counseling, and collaborative problem solving. Tutors generally review already instructed material but may also introduce new material. Additionally, Toppings and Ehly noted that reciprocal peer-tutoring, where the pairs have equal experience, has been found to be effective.

Benefits have been identified for both the tutee and the tutor. Tutees have been found to achieve increased knowledge related to the subject being instructed by the tutor (Topping & Ehly, 2001). Tutors likewise gain a better grasp of the subject being instructed while also improving their academic achievements overall. Both tutees and tutors are reported to have improved attitudes and interaction skills from the instructional experience. Of note, disruptive students placed in a tutor role have been found to have similar benefits as high achieving students (Topping & Ehly, 2001).

Hryciw et al. (2013) studied peer-tutoring with undergraduate paramedic students. Two second-year paramedic students were assigned as tutors to twenty-five first-year paramedic student tutees. The purpose of the study was to evaluate the effectiveness of Peer Assisted Study Sessions (PASS). Study sessions were scheduled on a regular basis, allowing tutees to compare notes, discuss reading, and develop organizational tools.

Tutors helped tutees understand the content being reviewed in the study sessions. It was concluded that first-year student tutees had improved study skills and higher confidence in their approach to studying. Student outcomes resulted in increased retention rates and increased academic performance.

In relation to dental hygiene didactic courses, Moore and Kain (2011) paired six second-year students with five or six sophomore students each. Peer dental hygiene students offered support with learning in a problem-based course through tutoring. The curriculum content covered in the tutoring sessions was not specified as important; rather, the focus of this study related to tutoring techniques. Mentors completed questionnaires, their tutor sessions were observed with video recording, and documents were collected. Documents consisted of training materials and evaluation forms. Moore and Kain found that the study skills of tutees improved when tutors utilized the critical technique of tell, ask, clarify, and acknowledge.

### **Summary**

This chapter reviewed the literature. A description of dental hygiene preparation programs was detailed. The distinction and relationship between confidence and competence in professional practice was discussed. Additionally, the Iron Triangle of health-care was discussed, providing insight into its relationship to dental hygiene professional practice. Dental hygiene advanced practice licensure was offered as an avenue to address access and quality of oral health-care limitations. Peer-mentorship in academic preparation programs was discussed. The effect of being a mentor and being a

mentee were both presented. The next chapter is the method section focusing on the essential steps in designing the mixed methods approach to this study.

## **CHAPTER 3**

### **METHODOLOGY**

This chapter describes the methodology that was used in this study to answer the central research question: What is the contribution of peer-mentorship in a dental hygiene program to confidence in initial professional practice? The chapter consists of five principal sections. The first section provides a description of the research design. The second section describes the study participants. The third section describes the data sources. The fourth section describes the data collection procedures. The fifth section describes how the data were analyzed.

#### **Research Design**

A mixed methods design was employed. Creswell (2014) defined mixed methods research as being in the middle of a continuum between qualitative and quantitative. Creswell also offered an explanation to the varied terminology related to mixed methods research. Many different terms have been used, including integrating, synthesis, quantitative and qualitative methods, multi-method, and mixed methodology. The term mixed methods is used for the purpose of this study.

Qualitative research is used to explore the meaning attributed to social problems. Data are collected from participants in their environments with the researcher inductively building from specifics to general themes during analysis. The researcher makes interpretations of the meaning of the data (Creswell, 2014). Quantitative research is used to explore relationships among variables. Variables, in the form of numerical data, are analyzed using statistical procedures (Creswell, 2014). Mixed methods research

incorporates elements of both approaches. The two forms of data are used to answer the research question by either using qualitative data to provide a more nuanced interpretation of quantitative data collection, using quantitative data to offer a larger scope to qualitative data, or collecting qualitative and quantitative data separately then comparing the results when answering the research question. For the purpose of this study, interview data, survey results, and select test scores from institutional data offered a combined approach to understanding the role peer-mentorship played in a dental hygiene program to confidence in initial professional practice.

A mixed methods approach can be traced back to the late 1980s, but has gone through several phases of development since that time. The phases include the formative, paradigm debates, procedural developments, advocacy, and reflective periods (Creswell & Plano Clark, 2011). The formative stage was the beginning phase of mixed methods research, providing a platform for this research design to be explored. Researchers collected foundational ideas which offered a framework to establish a definitive research approach. The paradigm debate phase included discussions about the legitimacy of a mixed methods research design. Researchers debated the legitimacy of a design that included both qualitative and quantitative data. The legitimacy was questioned because research was traditionally approached using a single method approach. The procedural development phase included developing processes to be used when conducting mixed methods research. This phase solidified the framework originally explored in the formative stage. The advocacy phase included a timeframe that researchers promoted the use and legitimacy of this research design approach. Finally, the reflective period phase is

the current phase which includes reflection on all the phases of mixed methods research which has contributed to its presence in research today (Creswell & Plano Clark, 2011).

Creswell (2014) indicated that a mixed methods design is frequently used in research associated with the health sciences. There has been a rise in health science mixed methods research due to an increase in general acceptance of the mixed methods research design as well as researchers wanting to explore a combined qualitative and quantitative approach (Creswell & Plano Clark, 2011). Health science researchers often want to use a research method that provides both numerical data and participants lived experiences to answer the research question.

### **Study Participants**

Two distinct groups of participants were included in this study: three cohorts of dental hygiene students and faculty who taught them. Both groups were associated with a single community college in the western region of the United States. The cohorts graduated in 2012, 2014, and 2015. Each cohort originally consisted on twelve students and had a different mentoring experience. The graduating class of 2012 were mentees during the first year of their dental hygiene program, but did not act as mentors during the second year. The graduating class of 2014 did not serve as mentees during the first year of their dental hygiene program, but did act as mentors during their second year. The graduating class of 2015 were mentees during the first year of their dental hygiene program and acted as mentors during their second year of dental hygiene school. In summary, 2012 graduates served as mentees only; 2014 graduates served as mentors only; 2015 graduates served as both mentors and mentees.



The paired mentor-mentee students were identified as Big/Little Buddies. A Big Buddy was to provide a familiar face to the mentee and provide generalized academic support and role modeling for the mentee. Mentors could answer questions about didactic courses and the related projects, pass patient names from the mentor to the mentee, and improve the academic experience of their mentee. Mentorship was not intended to impact either student outcomes or program outcomes.

Thirty-four students were invited to complete the on-line survey. The 2012 cohort had 12 students. The 2014 cohort had 10 students. Two students, out of the originally 12 accepted in the 2014 cohort, dropped from the program. The 2015 cohort had 12 students. Of the 34 invited participants, 29 completed to the on-line survey, resulting in a response rate of 85%. Ten participants were from the 2012 cohort. Ten participants were from the 2014 cohort. Nine participants were from the 2015 cohort. Additionally, four students from each cohort were interviewed; this provided student perspectives from approximately one-third of the students from each cohort.

Three faculty present during the matriculation of the 2012, 2014, and 2015 cohorts were interviewed. Only one of the three faculty interviewed was present during the development of the dental hygiene program and the initial implementation of peer-mentorship. That faculty member provided the program initiation information.

### **Data Sources**

Four data sources were used to answer the research questions. One source was qualitative; three sources provided quantitative data.

**Qualitative data sources.** The qualitative data sources consisted of telephone interviews with select students, an open-ended survey question answered by all students, and telephone interviews with all faculty associated with the three cohorts.

***Student.*** Student interview data consisted of four areas of questioning. First, information about how the participant was connected to the dental hygiene program, including the year he or she graduated, provided contextual understanding about each participant. Once it was established which cohort the student represented, the interview focused on how the participant perceived the mentorship experience. Third, information about how study participants thought peer-mentorship affected their academic progress was explored. Lastly, the participant's comfort to initially practice dental hygiene was examined. Comfort working with other health-care professionals outside of dentistry was addressed. The student telephone interview guide is presented in Appendix A.

In addition to the interview, there was one qualitative component to the on-line student survey. Students were asked to write the best aspects of Big Buddy mentorship as well as what they might change about Big Buddy mentorship.

***Faculty.*** Faculty interview data consisted of five areas of questioning. First, questions asked about their connection with the dental hygiene program, including how long they had worked at the community college and whether the participant taught at other dental hygiene program(s). Second, their perceptions of the strengths and weaknesses of peer-mentorship were explored. Third, because the faculty were involved with the three cohorts represented in this study, information was gathered about any differences they saw with the 2012, 2014, 2015 cohorts. Fourth, participants were asked

about their perceptions of the relationship between peer-mentoring and student success as defined by graduation rates, test scores, and confidence in initial professional practice. Comfort working with other health-care professionals was addressed. Clinical confidence and competence was also explored. Lastly, information about their experiences related to student outcomes when a class was not accepted in 2011 was explored. The faculty telephone interview guide is presented in Appendix B.

**Quantitative data sources.** The quantitative data sources included graduation rates, test scores, and on-line student surveys.

***Graduation rates.*** The first quantitative data source was graduation rates for the three cohorts of students. Graduation rates were provided as aggregate data for each cohort.

***Test scores.*** The second quantitative data source included National Board Dental Hygiene Exam test scores and state/regional clinical exam scores. Test scores were also provided as aggregate data.

***Student surveys.*** The third quantitative data source consisted of student surveys. Using a Likert-scale, the student survey asked participants to rank different aspects of the Big Buddy effort and their dental hygiene program experiences. The ranking was determined based on their individual experience as a student. The first five Likert-scale questions were specific to the Big Buddy effort. First, participants ranked the Big Buddy effort specific to mentorship being a critical component of their dental hygiene program. Second, participants ranked the Big Buddy effort specific to gaining confidence in their first professional clinical practice. Third, participants ranked the Big Buddy effort

specific to gaining confidence as a member of a health-care team. Fourth, participants ranked the Big Buddy effort specific to classroom learning. Fifth, participants ranked the Big Buddy effort specific to stress reduction. The last two Likert-scale questions were specific to the dental hygiene program. Participants were also asked to rank the dental hygiene program effort specific to feeling confident in their first professional clinical position. Participants also ranked the dental hygiene program effort specific to confidence with interfacing health-care professionals outside of dentistry. Demographic data were gathered at the end of the survey. The student survey is presented in Appendix C.

### **Data Collection Procedures**

All data was collected under the auspices of the university Institutional Review Board (IRB) as under exempt status (Appendix D). Once IRB approval had been granted, formal approval from the community college was sought and obtained (see Appendix E). The graduation rates, National Board Dental Hygiene Exam scores, and state/regional clinical exam scores for the three cohorts of students were obtained through a Data Use Agreement between the university and the community college where the research was conducted (Appendix F). For these three data sources, only aggregate data were collected to protect the identity of individual students.

The third data source was student surveys. The dental hygiene program director sent an invitation email, including an attached information sheet, to each student from the three cohorts; the email provided a link to the survey (Appendix G). The director was selected to send the study participation invitation and survey link to protect the privacy of the student contact information prior to study participation acceptance. The timeline to

respond was identified as one week. Notification of this timeline was in the survey invitation. The dental hygiene program director sent out a follow-up survey invitation one week after the initial invitation.

The fourth data source included telephone interviews. The dental hygiene program director sent a separate email from the survey invitation email, to the three cohorts of students. An information sheet was attached to the email (Appendix H). The timeline to respond was indicated as one week. Notification of this timeline was in the telephone interview invitation. The dental hygiene program director sent out a follow-up telephone interview invitation one week after the initial invitation. The emails explained that interested participants needed to call the researcher if they wanted to participate in an interview that lasted approximately fifteen minutes. An interview code sheet was used to protect participant identity (Appendix I). The four participants from each cohort were selected based on a first-come-first-serve basis. Incentive to participate included a \$10 Starbucks card which was mailed to the participant after the completion of the telephone interview.

Prior to the interview, the information sheet was reviewed to allow the participant the opportunity to ask any questions. After the participant provided verbal agreement to participate, the interview began. An interview guide was used during the student telephone interviews. The phone interviews were audio recorded for verbatim transcription.

Telephone interviews were also conducted with three dental hygiene faculty that were on staff during the matriculation of the three cohorts of students. Using publicly

available information, the faculty were invited to participate in this study. The email included a research study information sheet (Appendix J). The information sheet explained that interested participants need to call the researcher to participate in a 15-minute telephone interview. Incentive to participate included a \$10 Starbucks card that was mailed to the participant after the completion of the interview.

Prior to the interview, the information sheet was reviewed to allow the participant the opportunity to ask any questions. After the participant provided verbal agreement to participate, the interview began. An interview guide was used during the faculty interviews. The interviews were audio recorded for verbatim transcription.

### **Data Management and Analysis**

Data were coded by cohorts. The code contained the year the student graduated, followed by a unique number. The participants from the 2012 cohort were coded 12.1, 12.2, 12.3, and 12.4; participants from 2014 cohort were coded 14.1, 14.2, 14.3, and 14.4; participants from the 2015 cohort were coded 15.1, 15.2, 15.3, and 15.4. Faculty data was coded f1, f2, and f3. Paper files and the recording device were stored in a locked file cabinet. Data were stored on a stand-alone password-protected laptop computer.

This study used a mixed methods analysis. First, faculty interviews were analyzed to understand the dental hygiene program overall and how the mentoring activities were incorporated into the program. Second, the survey results for each cohort were analyzed. Third, the student interviews and responses to the survey questions were analyzed for a more nuanced understanding of the survey results. Finally, using all sources of data, a comparison among the three cohorts was conducted.

Survey response data reported the number of participants who did and did not return the survey. Response bias was determined using a wave analysis. Survey responses were examined week by week to determine if completed surveys in the initial and final weeks differed from the overall survey responses. It was understood if responses were different there was a potential for response bias. Graduation rates, test scores, and survey results were presented as descriptive statistics in figures and tables. Results for each question in the survey were presented in numerical form, based on cohort responses to each survey question. Trends were identified.

Qualitative data analysis was conducted with the telephone interview data. Verbatim transcripts from the interviews were read for a holistic understanding. Themes were identified. Sub-themes were identified for each cohort. Finally, major findings were based on the triangulation of identified themes in the student interview data, faculty interview data, and quantitative data (graduation rates, test scores, and survey results). Findings were analyzed against the research questions.

### **Summary**

This chapter reviewed the methodology. It consisted of five principal sections. The first section provided a description of the research design. The second section describes the study participants. The third section describes the data sources. The fourth section describes the data collection procedures. The fifth section describes how the data will be analyzed.

## **CHAPTER 4**

### **RESULTS**

During the timeframe of the study, 2011-2015, the two-year dental hygiene associate degree program in which the three cohorts participated had four distinct activities that could be described as mentoring: general mentorship; sharing patient names and information; professional mentorship; and peer tutoring. Each cohort experienced these mentoring activities very differently. This chapter is divided into four parts. The first part provides an overview of the dental hygiene program. This is followed by a description of the mentoring activities. Finally, the manner in which each cohort experienced the mentoring activities will be presented. This chapter concludes with summary of the mentoring activities experienced by the three cohorts.

#### **Dental Hygiene Program**

During the timeframe of the study the dental hygiene program under study had five goals (Kimbrough, 2010). The first goal was to provide the highest quality of instruction and educational experiences, culminating in a license to practice dental hygiene and the knowledge to provide preventive dental health services safely to the public. The second goal was to prepare competent practitioners to provide educational, clinical, and therapeutic services supporting total health through the promotion of optimal oral health. The third goal was to encourage a philosophical appreciation for the highest standards of care, as well as ethical and moral conduct. The fourth goal was to provide an environment for the development of professional values consistent with the philosophy that the dental hygienist has an obligation for lifelong learning for self-improvement,



maintain professional competence, and community standing. And lastly, the fifth goal was to encourage thought, action, and respect appropriate for diverse populations.

Students completing the dental hygiene associate's degree were eligible to take the written National Board Dental Hygiene Examination (NBDHE) and sit for a state or regional clinical examination. Additionally, graduates were eligible to take the state Dental Practice Act ethics examination. Passing all three exams was required to obtain a state dental hygiene license.

To be granted an associate's degree in dental hygiene, students completed a 54-unit, two-year program. The Dental Hygiene (DH) 110, Concepts of Oral Health, course was taken by the entering students during the summer after the new student orientation. The Concepts of Oral Health course covered the basic concepts of oral health-care and the use of adjunctive aids.

There were five courses in the fall semester of the first year. Oral Biology, DH 102, covered the histology and embryology of oral structure formation. The DH 103, Head and Neck Anatomy, course covered the anatomy of the head and neck with emphasis on structure and physiology of the oral cavity. The DH 104, Dental Hygiene I, course was designed as an introduction to dental hygiene practice. Dental Hygiene 105, Introduction to Clinical Practice, was a preclinical course that covered the clinical practice content learned in DH 104. Oral Radiology, DH 112, covered the theory of radiology, the techniques of film exposure, processing, mounting, and interpreting normal and abnormal anatomy on radiographs.

There were six courses in the spring semester of the first year. Dental Hygiene 113, General and Oral Pathology, covered the fundamentals of microscopic and gross pathology, disease, repair, healing, and regression. Dental Hygiene 115, Clinical Practice I, was the first clinical course during which patients were treated. The DH 120, Fundamentals of Nutrition in Dentistry, course was an introduction to the principles of basic biochemistry. The DH 202, Pharmacology, course covered the study of drugs by groups with special emphasis on those used in dentistry. The DH 209, Pain and Anxiety Control, course covered the administration of local anesthetics and nitrous oxide/oxygen analgesia. The DH 118, Advanced Clinical Topics in Dental Hygiene, course was a laboratory course that focused on advanced instrumentation, ultrasonic devices, root planing, gingival curettage, subgingival irrigation, hypersensitivity treatment, instrument sharpening, care of dental implants and oral prostheses, and other adjunct treatments.

There were five courses during the fall semester of the second year. The DH 203, Special Patients, course covered considerations in the treatment of patients with specific physical and mental challenges; special emphasis was placed on the management of geriatric patients. The DH 205, Clinical Practice II, course covered the clinical application of diagnostic, preventive, and therapeutic procedures utilized in patient care, with increased levels of achievement in all dental hygiene skills. The DH 207, Periodontics I, course covered the study of periodontal diseases, etiologies, recognition of normal periodontium and deviations of normal, clinical assessment, treatment, and prevention of disease progression. The DH 208, Community Dental Health I, course covered the functions of health-care agencies, literature, epidemiology of dental diseases,

community preventive measures, program planning, the geriatric population, and dental health educational methods. The DH 211, Dental Materials and Techniques, course covered the study of dental materials including physical and chemical properties, manipulation, utilization, and application in dental and dental hygiene procedures.

There were four courses during the spring semester of the second year. The DH 107, Legal and Ethical Implications in Dental Hygiene, course was an introduction to professional, legal and ethical concepts in dental hygiene. The DH 214, Periodontics II, course was the advanced study of periodontology with special emphasis on new surgical modalities and equipment. The DH 215, Clinical Practice III, course was a continuation of DH 205 Clinical Practice II (year 2, fall semester), and covered the clinical application of diagnostic, preventive, and therapeutic procedures with increased levels of achievement in all dental hygiene skills. The DH 218, Community Dental Health II, course was a continuation of Community Dental Health I (DH 208), designed to prepare the students to function as effective oral health practitioners, educators, and resource persons in a variety of community health settings. See Table 1. for an overview of the course sequence.

Table 1. Two Year Course Sequence

Summer/Fall Semester	Spring Semester
First-year	
Summer <ul style="list-style-type: none"> <li>• DH 110 Concepts of Oral Health</li> </ul> Fall <ul style="list-style-type: none"> <li>• DH 102 Oral Biology</li> <li>• DH 103 Head and Neck Anatomy</li> <li>• DH 104 Dental Hygiene I</li> <li>• DH 105 Intro to Clinical Practice</li> <li>• DH 112 Oral Radiology</li> </ul>	<ul style="list-style-type: none"> <li>• DH 113 General and Oral Pathology</li> <li>• DH 115 Clinical Practice I</li> <li>• DH 118 Advanced Clinical Topics in Dental Hygiene</li> <li>• DH 120 Fundamentals of Nutrition in dentistry</li> <li>• DH 202 Pharmacology</li> <li>• DH 209 Pain and Anxiety Control</li> </ul>
Second-year	
<ul style="list-style-type: none"> <li>• DH 203 Special Patients</li> <li>• DH 205 Clinical Practice II</li> <li>• DH 207 Periodontics I</li> <li>• DH 208 Community Dental Health I</li> <li>• DH 211 Dental Materials and Techniques</li> </ul>	<ul style="list-style-type: none"> <li>• DH 107 Legal and Ethical Implications in Dental Hygiene</li> <li>• DH 214 Periodontics II</li> <li>• DH 215 Clinical Practice III</li> <li>• DH 218 Community Dental Health II</li> </ul>

### Mentoring Activities of the Dental Hygiene Program

There were four different mentoring activities in place during the timeframe of the study, 2011-2015. The activities included: general mentorship; sharing patient names and information; professional mentorship; and peer tutoring. Some of the activities were informal; others were more structured. A description of each follows.

**General mentorship.** Peer-mentorship was utilized to allow a second-year student (mentor) to provide a familiar face at school and be supportive to a first-year student mentee. Support was to be generalized in nature and include both role modeling and academic support by answering questions about school details. Mentors also

answered questions about didactic course content and course projects. The implementation of peer-mentorship was purposeful with the intent to improve the overall “academic experience” of students. It was designed to give the new students a second-year student mentor to go to for general advice. One of the faculty described the intent:

The idea behind our mentorship program was to have a *seasoned* second-year student partner with a *newbie*, first-year student to try to create some collaboration, camaraderie, and connection between the two groups. I am not so sure that we meant for second-year students to mentor them as academic or clinical tutors, but more to be a friendly face, a person a first-year student could turn to for advice on what type of container they found best for storing their instruments, which surgical loupes they like and why, or how to better organize and manage their study time, etc.

Additionally, general mentorship was understood to be an avenue for students to practice teamwork. One of the faculty stated, “I do like the idea of mentorship because dentistry works best as a team approach. Our students learn teamwork from our mentorship program.”

The planning and implementation of general mentorship were handled by two full-time faculty and the program director. It was decided that the program director would pair students based on a few different strategies. Some students were randomly paired. Some students were paired based on personal requests by current and incoming students. Some students were paired based on the fact that they lived close to each other; the intent was that students who lived in the same general area may commute to campus together.

Some students were paired based on similar age; the intent was that students close in age may face similar life issues and could provide support to each other.

Mentorship was identified as a way to provide a familiar face to the mentee and provide generalized academic support and role modeling for the mentee. Mentors could answer questions about didactic courses and the related projects, promote teamwork, create a bond between the new and existing students, pass patient names from the mentor to the mentee, connect students with working professional dental hygienists, improve the academic experience of students, and provide clinical tutoring. Mentorship was not intended to impact either student outcomes or program outcomes. In addition, faculty encouraged students to utilize the mentorship relationship to its full capacity. The name of the mentoring component of the dental hygiene program changed from Big Sister/Little Sister to the Big Buddy because they had some male students accepted.

Each summer, all dental hygiene students attended the new student orientation. During this orientation, general mentorship was explained to the students. New students were seated next to a paired second-year Big Buddy student. It was decided that mentorship would have an informal structure and be verbally presented to the students rather than developing a written manual. The use of an informal mentorship process allowed students to decide the level of participation they felt was needed. The roles of the mentor and mentee were designed to be dependent on the needs of each student rather than the needs of the program. As a result, the mentor and mentee decided for themselves the level of engagement they wished to have with each other, outside of the required

attendance at the new student orientation and the required patient name sharing (described below).

The faculty wanted this pairing or general mentorship to allow students to communicate among themselves without faculty present. Faculty indicated that students sometimes have the capacity to grasp concepts and information from each other, particularly when faculty communication is not working. They also wanted the students to communicate with each other, free from faculty influence. The welcome barbeque or picnic was one of the traditions of mentorship that allowed time for mentees to talk with their mentors without faculty present. As one faculty member described it:

At the start of each new fall semester, the second-year students give little welcome gifts to their first-year Little Buddy and exchange contact information. Kind of, a little dental hygiene school survival kits. This takes place at the new student orientation session that is held prior to the start of the semester. The mentors also host a barbeque or picnic for the mentees before the start of the first semester to welcome them.

**Sharing patient names and information.** During the timeframe of the study, there were three clinical courses during which students performed dental hygiene procedures on actual patients. (It is important to note that the term, *patient*, is somewhat of a misnomer; these individuals acted as patients in the clinical courses, but were required to have their own private practice dentist where they received regular dental care.) Students were required to find people that met certain oral health criteria based on the focus of the three courses. In DH 115, Clinical Practice I (year 1, spring semester),

students were required to clinically perform oral prophylaxis, conduct equipment maintenance and sterilization, exercise patient management, provide patient education, apply topical fluorides, complete dental and periodontal charting, and manage their patient scheduling to keep their clinical courses filled with patients for learning purposes. For this clinical course, students were required to find patients with a healthy oral-health status.

In DH 205, Clinical Practice II (year 2, fall semester), students were required to perform all of the same clinical requirements as DH 115, but with an increased level of achievement in skills. Additionally, the clinical skills of scaling and root planing for periodontally-involved patients and the administration of local anesthetics were practiced. In this course students also synthesized the clinical application of diagnostic, preventive, and therapeutic procedures utilized in patient care. Dental Hygiene 215 Clinical Practice III (year 2, spring semester) was a continuation of DH 205. Students were required to perform all of the same clinical requirements from DH 205 but with an increased level of achievement in skills. For these two clinical courses, students were required to find patients with a diseased oral-health status.

Because students were responsible for finding patients that met the clinical requirements, mechanisms were put into place to facilitate the process. There were two primary ways students found patients. Students could rely upon personal contacts (e.g., friends, family, social media advertisement, students on the college campus) or they could utilize the Little Buddy Recall List. All second-year students were required to complete patient information on a Little Buddy Recall List form during DH 205, Clinical



Practice II, and Dental Hygiene 215, Clinical Practice III. The primary purpose of the form was to pass the names of patients that met specific clinical requirements from mentors (second year students) to mentees (first year students).

Included on the form was the name of the student's Little Buddy or mentee, as well as the patient's name and contact information, the patient's calculus classification, and the date the patient was completed. There was also a comments section for the mentor to pass pertinent information about patient case. Mentors utilized this form to communicate in writing which patients were good learning cases for specific clinic requirements. See Appendix K for the form. Additionally, patients were told that the student's Little Buddy may call them for a future appointment.

Actual management of the Little Buddy Recall Lists was the responsibility of the clinic coordinator. This practice was designed to safeguard that lists were transferred among assigned Buddies, as well as ensure that patients represented appropriate learning cases for specific clinic requirements. During the seminar portions of DH 115 Clinical Practice I (year 1, spring semester) and DH 215 Clinical Practice III (year 2, spring semester), the clinic coordinator obtained the Little Buddy Recall Lists from the second-year students and passed the Lists to the first-year students. The patient transfer instructions were discussed in class and emails (Appendix L) were also sent to students. Mentee-mentor pairs were encouraged by faculty to further discuss patient cases, although this was not required. It was left up to the students to decide if communication outside of the written comments on the Little Buddy Recall List was utilized. In some cases, the Little Buddy (mentee) did not have to utilize all of the patients passed through

the Little Buddy Patient Recall List; however, there could be another student in the cohort that could treat the patient based on their clinical requirements. Ultimately, faculty, in collaboration with the screening dentist of the dental hygiene program, made the final determination of patient treatment approval prior to students providing any patient care.

**Professional mentorship.** Mentorship activities also included professional mentorship. The purpose of professional mentorship was to provide students with networking opportunities as students matriculated through the program and prepared to enter the workforce. Additionally, professional mentors were used to provide students with a “real life” explanation of the dental hygiene profession outside of the academic environment. One of the faculty stated, “Mentorship between licensed professionals and students helps us too as faculty. It helps being able to get the feedback from the students and licensed professionals, so we can incorporate what students want from Big Buddy mentorship.”

During the time of this study the dental hygiene professional association experienced a leadership change. The change resulted in the desire to offer professional mentorship to students. A dinner was hosted by the President-Elect and three members of the local dental hygiene association. The professional mentors offered workforce advice and encouragement to the students. The professional mentors also wanted to provide National Board Dental Hygiene Exam scheduling information and clinical exam insight. The students were provided the contact information of the professional mentors and encouraged to reach out to them after the hosted dinner.

**Peer tutoring.** Peer tutoring occurred during the spring semester. Second-year students enrolled in DH 215, Clinical Practice III, were required to devote two hours to tutoring first-year students enrolled in the laboratory portion of DH 118, Advanced Clinical Topics in Dental Hygiene, which focused on advanced instrumentation, ultrasonic devices, root planing, gingival curettage, subgingival irrigation, hypersensitivity treatment, instrument sharpening, care of dental implants and oral prostheses, and other adjunct treatments. Tutors were not purposefully paired with their assigned Little Buddy or mentee; rather, faculty paired first-year students and second-year tutors based on the needs of the students. For instance, if a first-year student needed tutoring in a specific topic, he or she might be paired with a second-year tutor well versed in the concept. Sometimes, if the second-year student was weak with a specific topic, faculty paired that student with a first-year student, providing the second-year student the opportunity to review the topic and tutor the concept as a mechanism for strengthening the tutor's knowledge. In cases like this, the second-year student (i.e., the tutor) was provided an isolated clinic concept prior to the peer tutoring lab session. This allowed the tutor time to review the concept and engage in the peer tutoring fully prepared. Faculty explained that when the second-year students reviewed concepts they learned the material even better because they had to teach it to their Little Buddy in the Advanced Clinical Topics lab. Faculty explained that the tutoring was helpful to both the mentor and the mentee. One of the faculty stated the following:

So, the idea now is of having second-year students assist in the Dental Hygiene 118 Advanced Clinical Topics clinical lab. ... The second-year student is

assigned to a specific lab by the lead instructor based on their particular clinical strengths or sometimes challenges. The lead instructor seeks input from other second-year clinical instructors when deciding what student is assigned to what topic. The student is informed what topic and activities will be covered during that lab, so that they can prepare by reviewing the information and/or skills in order to teach and/or help. We have found that the second-year students do a really good job of making sure they *know their stuff* before coming to lab so they feel comfortable and proud of themselves, which further explains why we sometimes pick a student who is not as strong on that topic. This gives them an incentive to review and strengthen their knowledge and skills. They often have great insights into how to explain or demo a procedure or skill based on some tricks of the trade they developed, which really benefits the first-year students. The second-year students also get to observe how far they have come in their skills and abilities by watching first-year students just start to learn a new skill.

### **Cohort Statistics**

The 2012, 2014, 2015 cohorts started with 12 students each. Two students in the 2014 cohort dropped. One student dropped in her last semester because she realized she did not want to work in dentistry. The other student dropped with a re-entry plan because of a medical issue. The 2014 cohort's lack of mentorship was reported as not playing a role in either student deciding to withdrawal from the program. These two students withdrawing from the program resulted in 34 participants included in the graduation rate

and test score data. Persistence to graduate among the 34 participants was 100%. All of the students that graduated passed their National Board Dental Hygiene Exam and clinical exam on their first attempt.

Table 2. Persistence with Cohort and Test Scores

	2012	2014	2015
# in Cohort Admitted	12	12	12
Cohort Persistence	12	10	12
Pass NBDHE/Clinical Exam	12	10	12

The on-line survey was sent to 34 former students; 28 completed the on-line survey, resulting in a response rate of 82%. Ten participants were from the 2012 cohort. Ten participants were from the 2014 cohort. Eight participants were from the 2015 cohort. It is important to note that there were nine 2015 cohort graduates that logged in to take the survey. Eight students completed the survey. One student only indicated that they were a 2015 graduate, resulting their exclusion from the data results. (This student did not answer any of the survey questions). Nineteen of the 28 survey respondents self-reported as white. Twenty-six of the respondents self-reported an income above \$24,000 per year. Twenty-two of the respondents are between 18-30 years of age. See Table 3.

Table 3. Student Demographics

Age Range	18-30	22
	31-50	6
	51+	0
	No Response	0
Income	Less than \$12,000	0
	\$12,000-\$24,000	1
	\$24,000	26
	No Response	1
Ethnicity/Race	White	19
	Hispanic/Latino	4
	African American	1
	Other	3
	No Response	1

### Cohort Experiences of Mentoring Activities

The manner in which each cohort experienced the mentoring activities was different. The experiences of each cohort will be described, beginning with a summary of the mentoring activities the cohort experienced. This will be followed by the participants' reflections about mentorship in general. The findings from the survey will be presented, complemented by the relevant insights provided through responses to open-ended questions from the survey and interview data.

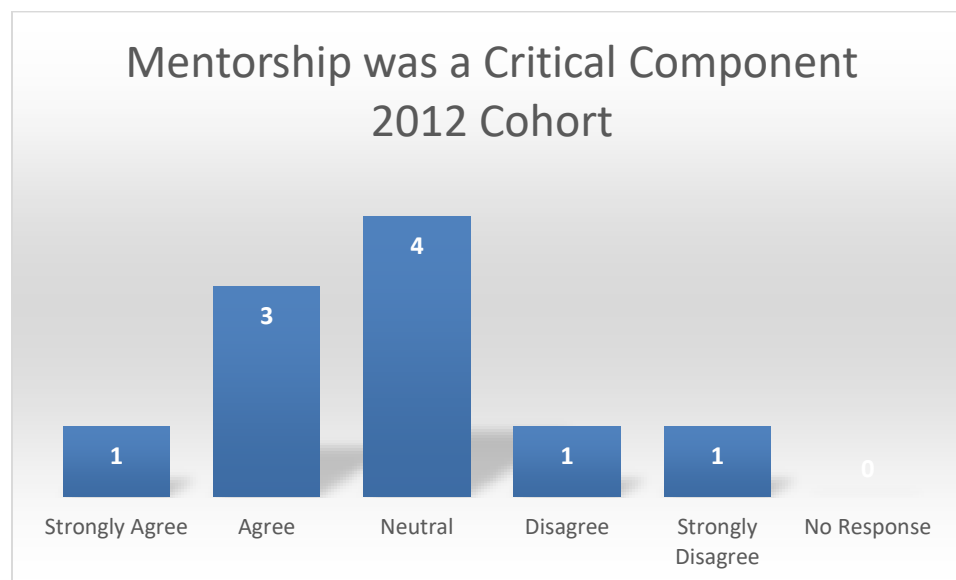
**Class 2012.** The graduating class of 2012 were mentees of the 2011 graduates (not included in this study) during the first year of their dental hygiene program, but did not act as mentors during the second year. In their first year of study, each member of the 2012 graduating class was paired with a Big Buddy at the new student orientation. The 2012 cohort received the Big Buddy Recall Lists through the usual clinic coordinator distribution and patient transfer instruction process and had the opportunity to discuss the patient list with their Big Buddy. Because there was no 2013 graduating class, they gave

their Big Buddy Recall Lists to the clinic coordinator until the next cohort was ready for the patient lists. This cohort did not participate in professional mentorship. Additionally, the 2012 cohort did not participate in peer tutoring. In summary, the 2012 cohort experienced half of the mentoring activities: general mentorship and receipt of patient names. For the two mentoring activities, this cohort experienced being mentees, but not mentors.

The 2012 cohort described mentorship in general as a good idea and an important part of any profession. In addition to benefits from role modeling, participants indicated that mentorship in an academic environment is useful for sharing information. One student stated: “Oh, I think it’s a great idea. One of the ways you learn is by helping other people. It’s being able to teach others what you have learned. That is a good way to retain information.”

Survey respondents were neutral to positive in their endorsement of mentorship in the dental hygiene program. Four participants agreed or strongly agreed, four were neutral, and two disagreed or strongly disagreed with the statement that the Big Buddy mentorship was a critical component of their dental hygiene program experience (see Figure 1).

Figure 1. Big Buddy/Little Buddy Mentoring was a Critical Component of my Dental Hygiene Program



Responses from the survey and open-ended interview questions were similar.

Some indicated that their experience was beneficial. The benefits related to the mentor being helpful, putting things in perspective, and answering questions. When asked about their experiences with the Big Buddy mentorship two of the students indicated:

My mentor was really sweet and she was supportive and very positive. She was very helpful. I was able to ask her questions when I needed. She was very positive and helpful.

Anything I had a question about he would just answer it, tell me what he would do and put it in perspective. He would tell me don't worry about that, or worry about this. I would go to him and he definitely would come to me. He helped me understand classroom projects in lecture, but mostly he helped me with clinical hands-on stuff.



It appeared that the mentor's willingness to interact and engage with the mentee influenced the respondent's perception of the mentoring process. Some respondents also indicated that they were too busy to go to their mentor for help. The unstructured approach to Big Buddy mentoring was cited as one of the reasons why mentees felt interaction became limited after the new student orientation and welcome barbeque.

When asked about their relationships with their mentors, one student indicated:

The problem I had was there wasn't really a whole lot of interaction, which it was left up to us. We are all busy doing our things, studying for our classes, and trying to get clinic patients. I don't think we were thinking about going to our mentor for help to maybe be forced to hang out together, almost like a class we have to take.

One issue identified was the lack of guidance about how to serve as a mentee.

Statements were made about the new student orientation, but all indications were that no specific guidelines were provided. Indeed, it was suggested to make Big Buddy mentorship more structured to increase contact time between the Buddies.

***Confidence and competence.*** When asked about gaining confidence through mentoring activities, four participants agreed or strongly agreed, five were neutral, and one strongly disagreed with the statement that the Big Buddy mentorship helped them gain confidence to enter professional practice (see Figure 2).

Figure 2. Mentorship and Confidence to Enter Professional Practice



The 2012 student interviews were inconsistent with the survey data. The interview participants did not report feeling confident with initial professional clinical practice. When asked about Big Buddy mentorship and confidence with initial professional clinical practice two of the students indicated:

In school, the instructors come and checked when you are done. Not having an instructor affected my confidence for a little bit after I graduated.

I would say it took a little while to build confidence up because I was getting use to everything. Everything was overwhelming. It was a lot. It took a little bit to get established and get comfortable in the setting.

Confident participants expressed that their confidence was related to the rigor of the dental hygiene program which made them feel like they were prepared. One participant stated: "All the clinic time in school and all the patients we saw also contributed to me being comfortable in private practice. It really prepares you."

It appeared that nervousness was related to confidence. Half of the respondents felt nervous when they started the actual practice of dental hygiene after graduation. Their nervousness related to time management and being unfamiliar with office procedures.

Yeah, I was definitely nervous. I think the biggest reason why was because in clinic we would have a 4 to 5 hour session. I was wondering, how am I going to clean someone's teeth, write notes, and clean up after myself in an hour.

Comfort came in the first months with practicing clinical dental hygiene in the workplace. There were many aspects that telephone interview participants attributed to feeling comfortable. Becoming familiar with the environment was important in this transition. When asked, "How long did it take for you to feel comfortable in practicing dental hygiene? What contributed to feeling comfortable?" one of the 2012 cohort participants described the following:

I would say after about a month I finally felt comfortable talking to patients and getting it done on time. I guess it is just practice, doing it over and over again to get comfortable. Going to work every day and realizing that I was prepared, that my instructors did prepare me for the real world heled me.

Participants found decreased nervousness related to computerized charting to be a much greater challenge. Comfort with computerized charting and documentation took up to a year.

I would say as far as everything clinically I was comfortable right away. As far as working the computer system, scheduling, and those kinds of things it took me a

while because we did not have any of that in school. It probably took me about a year to really feel comfortable.

Telephone interviews included questions about initial clinical competence.

Participants did not link Big Buddy mentorship with helping them gain initial clinical competence. Indeed, the 2012 cohort questioned their competence when entering professional practice. Insecurities related to feeling like they did not know how to act when there was not an instructor there to check their work. Like confidence, competence came with time in actual professional practice. One interview participant described:

My competence came as I would see recall patients. It's harder in hygiene school because you don't really see patients again, so it was nice when you could see whatever treatments you gave when the patient came back. Instead of learning textbook information I was actually seeing it and then I was able to know I was competent.

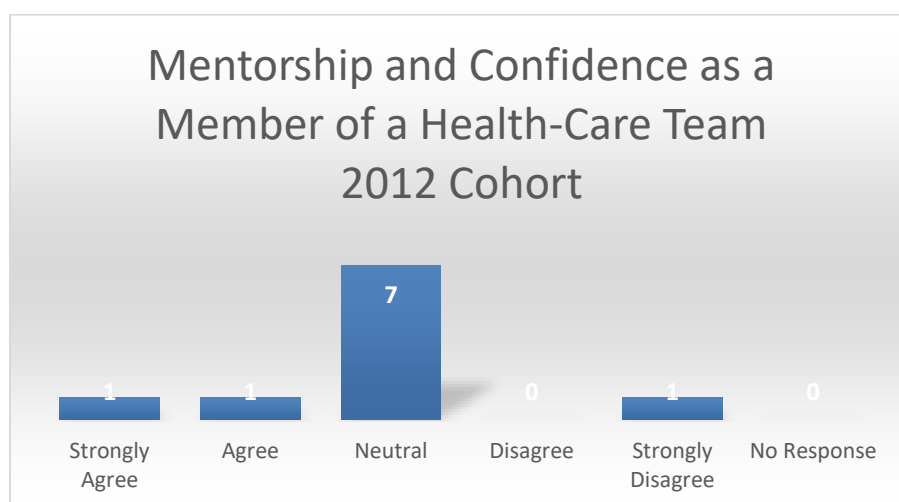
Additionally, one participant gained competence with mentorship provided by a co-worker. This co-worker was not a participant in this study. This participant indicated:

I actually did have a mentor at work. So, one of the women that I worked with has been doing dental hygiene for 30 years. And so, she kind of took me under her wing to show me different techniques or things, or products she likes. In the real world using a mentor actually did really help me. I had really great women I worked with. I wasn't by myself ever; I always had someone to talk to. They prepared me for my second job when I was by myself. As far as competence, there was a time when I felt like I was not scaling the lower anterior well, so my

work mentor had me clean her teeth. Then we went and used the typodont that I had from school.

**Member of health-care team.** The faculty indicated that one of the important considerations in including mentoring activities in the dental hygiene program was that it helped students become more confident working as a member of a health-care team. Among the 2012 cohort, two participants agreed or strongly agreed, seven were neutral, and one strongly disagreed with the statement that the Big Buddy mentorship helped them gain confidence to work as a member of a health-care team (see Figure 3).

Figure 3. Mentorship and Confidence to Work in a Health-Care Team



Interviews revealed that the 2012 cohort had mixed feelings about working with another health-care team member, outside of the dental field when entering professional practice. Reasons for confidence related to the participants feeling like they were an equally important member of the health-care team. Two participants stated the following:

I felt confident in what I knew. I felt like I was on an equal playing field. We are all clinicians. We all have the same patient in mind. I was confident in all my conversations I had with other health-care professionals.

It was fine. I had no problem communicating with other professionals. It was strait forward and upfront. It was easy for me.

In contrast, other respondents indicated lack of confidence as a member of a health-care team. Common reasons were nervousness and not knowing exactly what questions to ask. Confidence was reported to increase as graduates gained experience with other members of a health-care team and nervousness decreased by practicing on the job.

I would say at first it was a little nerve wracking. I would say I have not done much more than calling about premed and getting clearance. I am definitely comfortable with that now but at first it was nerve wracking. It took me 2-3 months to get comfortable.

***Classroom learning.*** When asked about mentorship facilitating learning in the classroom, three participants agreed or strongly agreed, six were neutral, and one disagreed with the statement that the Big Buddy mentorship facilitated learning in the classroom (see Figure 4).

Figure 4. Mentorship and Learning in the Classroom



Telephone interviews included questions about the Big Buddy mentorship and academic progress. The 2012 cohort described many positive academic experiences related to their progress as students; however, some participants related Big Buddy mentorship more to encouragement and help along the way rather than actually impacting their academic success. One participant stated:

Every once in a while, my Big Buddy and I would pass each other in the hall and she was really good at saying you will get through it. It was nice to be told you are not alone. You will be in my place in a year.

Role modeling, stress reduction, and help with understanding clinic and class projects were cited as important characteristics of the Big Buddy Little Buddy mentorship. One participant stated: "I think it definitely helped, especially to relieve stress. Like it was just helpful to have someone that had gone through it that was able to

provide advice, kind of give guidance.” Additionally, role modeling put the program into perspective for the mentees. One participant stated the following:

I don’t know. We thought we sucked but when the other class told us how much farther along than they were when they were first-years it made us feel good. It is hard to explain. Generally, the comments made us feel more comfortable to talk to them. They helped our confidence because we would say we can’t do this and they would say don’t worry about that you will get it.

Some participants related Big Buddy mentorship to directly impacting their academic success because it provided a person, other than an instructor, for the mentee to go to for academic help. Mentees went to their Big Buddy for mentorship related to didactic and clinical questions. When asked, there are lots of reasons to include mentoring as part of an academic program. Tell me about how you think the Big Buddy mentorship affected your academic progress, one of the telephone interviewees stated the following:

I definitely think it helped improve my academic progress because if there was something I was working on academically that I did not understand I could ask her. She would know because she had already been through that. She could kind of help guide me through it. I asked both classroom and clinic questions, like classroom project and definitely different things in clinic; as we started getting more and more into that.

Telephone interviews also included questions about the National Board Dental Hygiene Exam (NBDHE) to gain licensure. The 2012 telephone interview participants



did not relate Big Buddy mentorship to academic progress or passing the NBDHE; rather, academic progress was related to the acquisition of board exam review materials. One student stated: “Obviously having the Dental Decks that my Buddy gave me helped. I used that for every single test and to study for my national boards.” Mentees felt the review materials helped them as they prepared for the national board exam.

**Stress.** In response to the question about mentorship reducing stress, three respondents agreed or strongly agreed, six were neutral, and one strongly disagreed with the statement that Big Buddy mentorship reduced stress (see Figure 5).

Figure 5. Mentorship and Stress Reduction



Only one interview participant related Big Buddy mentorship to stress reduction, specifically to academic progress and national boards. The participant stated,

I think it definitely helped, especially to relieve stress. Like it was just helpful to have someone that had gone through it that was able to provide advice; kind of

give guidance. My stress was relieved about national boards because my Buddy reassured me while she was taking her exams.

**Professionalism.** Among the 2012 cohort, four participants agreed or strongly agreed, five were neutral, and one strongly disagreed with statement that the Big Buddy mentorship was helpful for them to feel like a professional (see Figure 6).

Figure 6. Mentorship and Feeling Like a Professional



**Suggestions for improvements.** Two suggestions were provided when participants were asked in the on-line survey what they would change about Big Buddy mentorship. The suggestions were diametrically opposed: don't assign buddies; require mandatory program facilitated meetings. Telephone interviews provided a bit more nuance. More regular interaction between the mentor and the mentee was suggested. One participant described this by stating:

I hope they did more with the Buddy program after I left. I wish I would have had more interaction. Maybe a class together so we could focus on helping each other

more. Not just a talking buddy. I hear they had the Big Buddy go into clinic and help their buddy with ultrasonics when they first broke those out. I thought that was kind of a good idea because ultrasonics were kind of a foreign thing to us until second-year.

There was also interest in making the Big Buddy mentorship more structured.

One of the participants explained:

I think the program would be more beneficial if there was more kind of interaction, scheduled structured interaction. Clinical time working with the others would be helpful. Learning skills and getting guidance from your mentor is helpful. Also, small things like little meetings. It would be a good idea for the program to structure the meetings because everybody is so busy and they don't see it as important all the time.

**Class 2014.** The graduating class of 2014 did not have mentors during the first-year of their dental hygiene program, because there was no 2013 cohort. They were paired with a Little Buddy in their second-year and expected to mentor them without having received mentorship themselves. The 2012 cohort received the Big Buddy Recall List from the clinic coordinator instructor, but did not have a Big Buddy to contact if they wanted to have further discussions related to the patient cases on the list.

The 2014 cohort received professional mentorship. The local Dental Hygienists' Association (NNDHA) President Elect and three other NNDHA members hosted a dinner party for dental hygiene students in the summer of 2013. The president elect contacted the program director for approval to hold a professional mentorship event. The

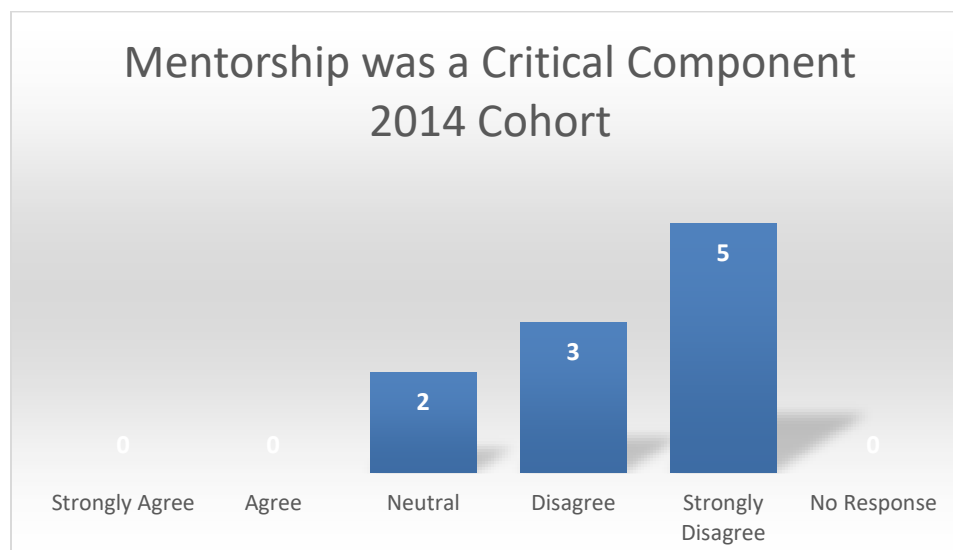
professional mentors were past graduates of the dental hygiene program. Two of the professional mentors graduated prior to the time of this study. Two of the professional mentors graduated in 2012 and were participants in this study. The professional mentors wanted to reach out to the 2014 and 2015 cohorts to offer professional mentorship, particularly because the 2014 cohort did not have second-year peer-mentors. The professional mentors offered workforce advice and encouragement, particularly related to the National Board Dental Hygiene Exam and clinical exam. The students were provided the contact information of the professional mentors and encouraged to reach out to them after the hosted dinner.

The 2014 cohort described mentorship in general as a good idea that could help with both school and personal life. Specifically, participants indicated that mentors in an academic environment could give advice based on what they have already experience firsthand. One student stated:

I think mentorship has a huge impact on overall success and having guidance with getting through school, but then also getting through life. I guess it's just getting through everything, it is always good to have a mentor and somebody to talk to and look up to.

Survey respondents were neutral to negative in their endorsement of mentorship in the dental hygiene program; two were neutral and eight disagreed or strongly disagreed with the statement that the Big Buddy mentorship was a critical component to their dental hygiene program experience (see Figure 7).

Figure 7. Big Buddy/Little Buddy Mentoring was a Critical Component of my Dental Hygiene Program



Responses from the survey and open-ended interview questions were similar.

There was regret by the 2014 interview participants that they did not have mentors. One student stated, “While I was in the dental hygiene program unfortunately my first-year we did not have a Big Sister.” Indeed, some of the 2014 cohort Big Buddies purposefully made themselves available to their Little Buddy because they felt regret from not having a peer-mentor to go to for mentorship during their first-year of the program. One student described her efforts to provide both available and meaningful mentorship as follows:

I would meet with my Little Buddy and check with her frequently and see how she was doing. I checked to see if she had any questions. She would let me know what they were doing in class and what project she was working on. She asked me what I would do on certain projects and how I figured stuff out. I would tell her when I missed the boat on certain thing. I would tell her to go in this direction

because that's what they're looking for. She came over to my house a couple times. We worked on instrument stuff on typodonts. I was there for her any time she needed me, I gave her time to help whether it was hands-on or academic-wise. Both of us would initiate meeting initially when we were assigned. I would reach out to her and I told her you're never going to bother me, please any time, day or night, whatever I can do to help you. If I'm not doing something actively myself that day I will try to work in time to make time for you. I tried to make the door open between us so that she felt comfortable to ask for help and I think she did. I would check in on her and she would call me, text, or write emails. When we were there at school the same time, she would always ask for help when she needed it.

The only issue identified in serving as a mentor was with time availability because the program was so demanding. When asked about their experience with Big Buddy mentorship two of the students described the following:

We all did pretty well helping each other out and trying to be there for our Little Buddy. It is hard to be in the program and be available sometimes because you are busy with your schoolwork and you don't always remember all the little projects that they have questions on. That was pretty much the only issue really.

I did not feel it really took away from what I was doing at all. It helped me to help her. When you learn something and you can explain it to somebody else, the grasping of the information is even better.

Overall, the mentors felt like they had good relationships with their mentees. They wanted to share their knowledge and materials with their Little Buddy. Indeed, the 2014-2015 Buddy pairs described passing patient names between each other to meet each of their immediate clinical needs. Mentors did not necessarily wait to pass a patient down through the Big Buddy Recall List process if they felt they had a patient the other needed at that specific time. One Big Buddy described this by stating:

My Little Buddy and I had a really good relationship. I helped her a lot with books and passing stuff down to her whenever that was possible. She contacted me pretty often when she was having trouble with knowing what to expect or finding patients. It was nice to be able to pass down easier patients to her so she could get to her requirements and whenever she had patients her first year that were too difficult for her to see, it was helpful for her to pass them up to me.

Mentors felt the relationship was beneficial for the Little Buddy both while in the dental hygiene program and after graduation. Some Big Buddies stayed in touch with their mentees and helped them transition into private practice as licensed dental professionals. When asked about their relationship with their mentee two of the students indicated that they helped their mentee both while in the dental hygiene program and after their Little Buddy graduated they helped them to get a job. Two of the 2014 students stated:

We would touch base whenever she had questions about classes and wanted to go over things. We stayed in contact through phone and still to this day she subs for me when I need a sub at work. That relationship was really great to have for her

going through her first-year and once she did graduate she came in into my work and shadowed me at my office.

I had a Little Sister that was awesome. For my Little Sister, I just kinda helped her with everything I could. I would offer her to look at my binders to see what I did. Not necessarily to give her answers but I wanted her to know what worked for me. I actually ended up getting her a job when she graduated.

One issue identified was the lack of guidance about how to serve as a mentor. Mentors described feeling lost with what to do because they did not have a model to follow, “I really didn't know everything what to do because I didn't have anybody to model after or learn from.”

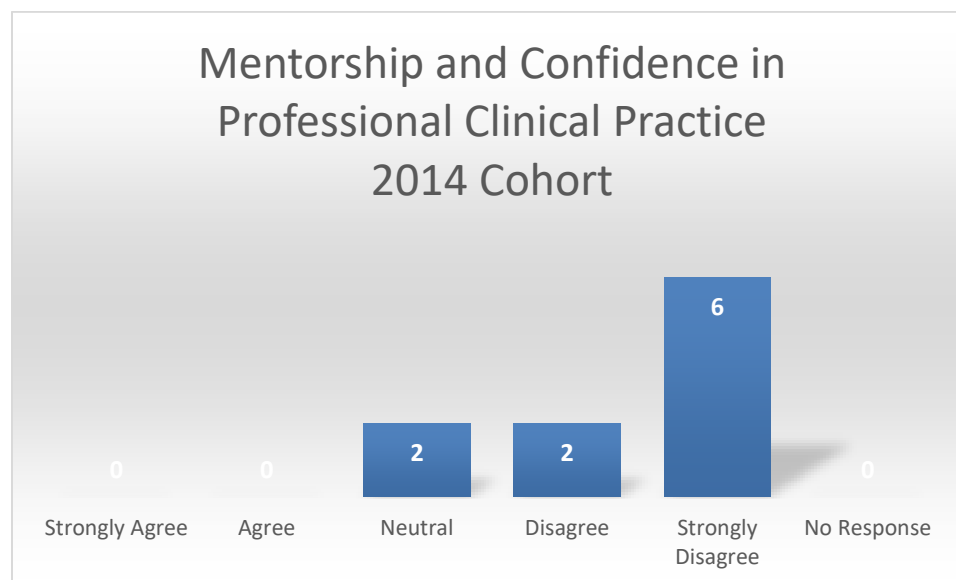
Statements were made about the new student orientation, but all indications were that no specific guidelines were provided;

No, the teachers kind of just briefly went over it. It was suggested to just kind of try to help each other out. I took this seriously and felt like it was important because I did not have a mentor. Because I did not have a mentor I did not know what I was doing, so I don't think I could help out as much.

***Confidence and competence.*** When asked about gaining confidence through mentoring activities, two were neutral and eight disagreed or strongly disagreed with statement that Big Buddy mentorship helped them gain confidence to enter professional clinical practice (see Figure 8).



Figure 8. Mentorship and Confidence to Enter Professional Practice



The 2014 cohort telephone interview participants did not report feeling confident with initial professional practice. Participants consistently reported feeling like they needed time to build their clinical confidence when entering professional practice. Participants did not link Big Buddy mentorship with helping them gain initial clinical confidence. Indeed, it was clinical experience over time that impacted improved confidence. When asked about Big Buddy mentorship and confidence with initial professional practice two of the students indicated:

I think that confidence wise I definitely gained that over time. Especially after working for a while. I would see the same patients, they would recognize me. The trust from my patients helped me gain my confidence.

For confidence, when I started seeing patients back after six months and took x-rays I could see there is not a lot of calculus. I could see on the perio-charting it

also looked better. I noticed as I checked what I was doing I could tell I was doing a good job.

Work mentorship provided support for participants to improve their clinical confidence. It was both clinical experience over time and work mentorship that impacted improved confidence. When asked about Big Buddy mentorship and confidence with initial professional practice one of the students indicated:

I think what really helped with me in confidence was talking with the other dental hygienists I was working with. They acted as my work mentors. I am a question asker. I wanted to learn as much as I could from them. Then they would come to me, as a new graduate, to ask me questions. It was cool because I could contribute to our relationship too. My work mentors and my patient experiences helped me build my confidence over time.

It appeared that nervousness was related to confidence. All of the respondents reported feeling nervous when they started the actual practice of dental hygiene. Their nervousness was related to time management. Two of the 2014 cohort participants described the following:

Yes, I definitely was nervous. We had never done 60 minute appointments before in school so I was really nervous about being able to finish everything in time. The time management thing; that's always a stressful thing for your first working experience.

Absolutely I was nervous, it's a very different setting then in school. The office does 40 minute appointments so it was quite a shocker going from 3 1/2 hour appointments in school to 40 minute appointments in private practice.

One of the 2014 telephone interview participants experienced nervousness related to performing advanced duties such as Scaling and Root Planing (SRP) and local anesthesia without an instructor present. When asked, I would like you to think about when you first walked into the actual practice of dental hygiene. Were you nervous? If so, why. If not, why not?, this 2014 cohort participant described the following:

Yes, I was nervous. I think I was nervous and excited though. It was weird when I saw my first patient and nobody was coming to check me out. It was weird not having somebody check that I got everything. Now I would say I was nervous when I first started giving injections and had SRPs.

Participants found decreased nervousness within a couple of weeks. Aspects that contributed to comfort level in clinical practice included working in a supportive dental office environment and teamwork: "The office I started at was very small, everyone was really helpful. So, after a week I felt pretty comfortable asking questions and not being nervous anymore."

Telephone interview participants were asked about initial clinical competence. Interviews revealed that the 2014 cohort had mixed feelings about their initial clinical competence when entering professional practice. Participants that lacked initial clinical competence described the need to see patients back that they treated as a confirmation that they were clinically competent. They did not enter the workforce with clinical

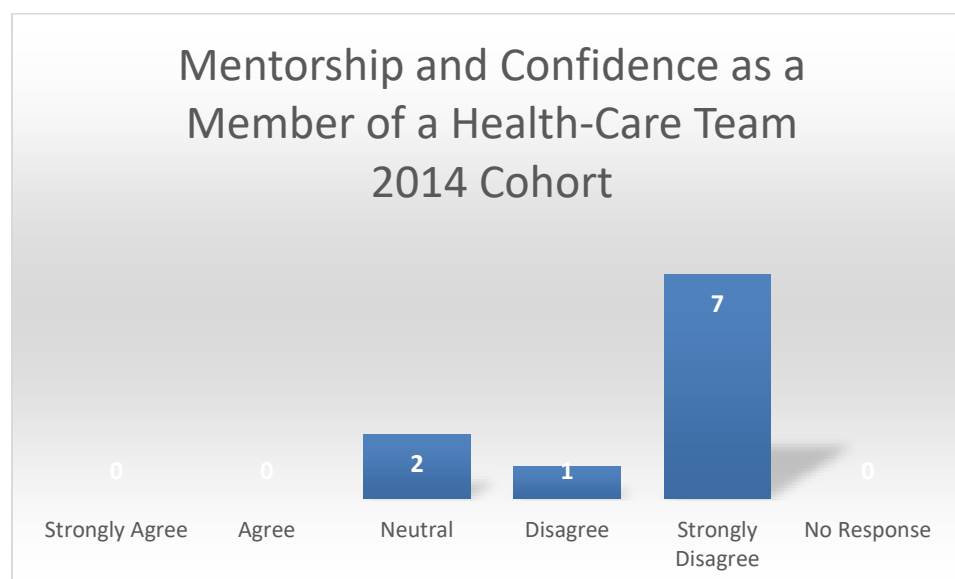
competence based upon their dental hygiene program experiences. For other participants, the rigor of the dental hygiene program was cited as the reason for a sense of initial clinical competence:

I felt good about my competence. We had a meeting and the dentist was very impressed with my clinical skills. I was very prepared coming in. They did not expect that from a student straight out of school. They were very impressed with how well prepared I was.

Another participant related her initial clinical competence to the improved gingival health she saw in her patients after providing scaling and root planing (SRP) care.

***Member of health-care team.*** Among the 2014 cohort, two were neutral and eight disagreed or strongly disagreed with the statement that the Big Buddy mentorship helped gain confidence to work as a member of a health-care team (see Figure 9).

Figure 9. Mentorship and Confidence to Work in a Health-Care Team



The 2014 student interviews were inconsistent with the survey data. The interview participants reported feeling comfortable with other health-care team members, outside of the dental field, when entering professional practice. Participants did not link Big Buddy mentorship with helping them feel comfortable with other health-care team members; their comfort came from prior dental experience and confidence in their education:

I did not have any problems when I first graduated. I was not nervous because I did front office for five years in a dental office before I started dental hygiene school. I have called to get premed as a front desk person so I had done it before. So I wasn't nervous, otherwise I probably would not have known what I was doing.

Another stated:

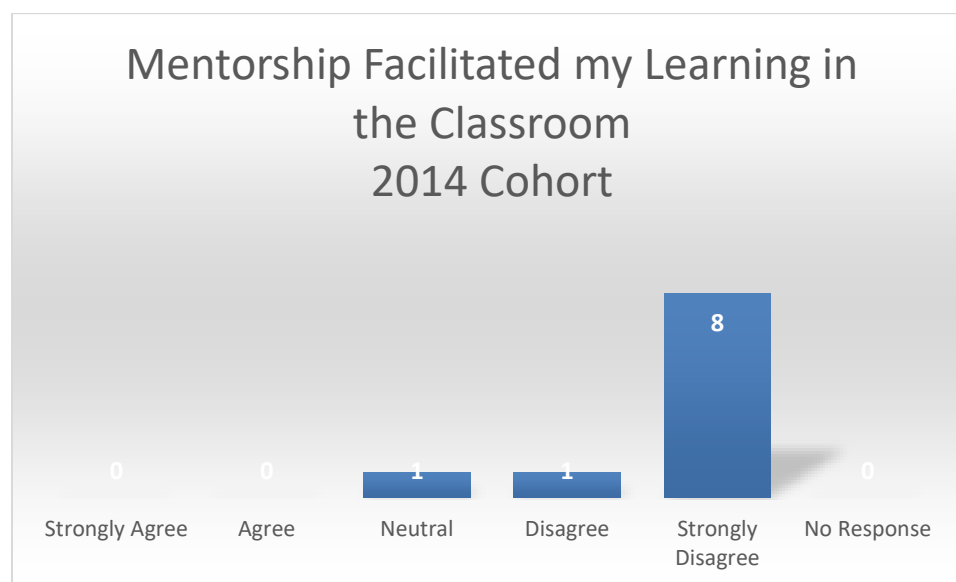
The dental hygiene program I went to definitely prepared me for knowing the requirements and the steps to take for taking premed and knowing what to do leading up to treatment. If the front desk was not able to call the medical doctor about a patient I would have felt comfortable. I definitely felt comfortable with that.

Another participant reported confidence working with other health-care team members, although her work situation was somewhat unique because she worked in a public health clinic. The clinic provides both medical and dental services to underserved individuals. When asked, Describe what it was like working with another health-care team member, outside of the dental field, when you entered professional practice, she stated the following:

I work with nurses and medical doctors all the time because I am a public health hygienist. Many of our patients have complicated medical histories that require lab work results prior to treatment. I enjoy public health and was never nervous working with the other members of my patient's medical care.

**Classroom learning.** When asked about mentorship facilitating learning in the classroom the majority of responses strongly disagreed that mentorship helped facilitate their learning in the classroom. Among the 2014 cohort, one was neutral and nine disagreed or strongly disagreed with statement that the Big Buddy mentorship helped facilitate their learning in the classroom (see Figure 10).

Figure 10. Mentorship and Learning in the Classroom



Telephone interviews also included questions about Big Buddy mentorship and academic progress. The 2014 cohort did not have mentors to ask for help and guidance when they matriculated through their first-year of dental hygiene school. It was reported consistently that not having Big Buddy mentors, to some degree, negatively impacted

their academic progress. One of the 2014 interview participants stated, “I think it affected my progress negatively in the beginning because I did not have a mentor. It was really difficult.” Indeed, the 2014 telephone interview participants reported feeling like something was missing from their educational experience. One participant explained, “It was difficult during our first-year of dental hygiene school because the teachers were not understanding why we weren't getting it like the other classes had gotten it. But I think there was something missing for us.”

On the other hand, 2014 telephone interview participants reported feeling the mentorship they provided to their Little Buddy helped their mentee's academic progress. When asked about how the Big Buddy mentorship affected academic progress, one of the telephone interview participants stated the following:

For my academic progress, I can't really say that it influenced it too much because we didn't have anybody and we were so independent. But for my mentee that I had, I think it was helpful to her academic progress, kind of having a little bit of guidance and support and I think that is always great to have when you're in a stressful program like dental hygiene.

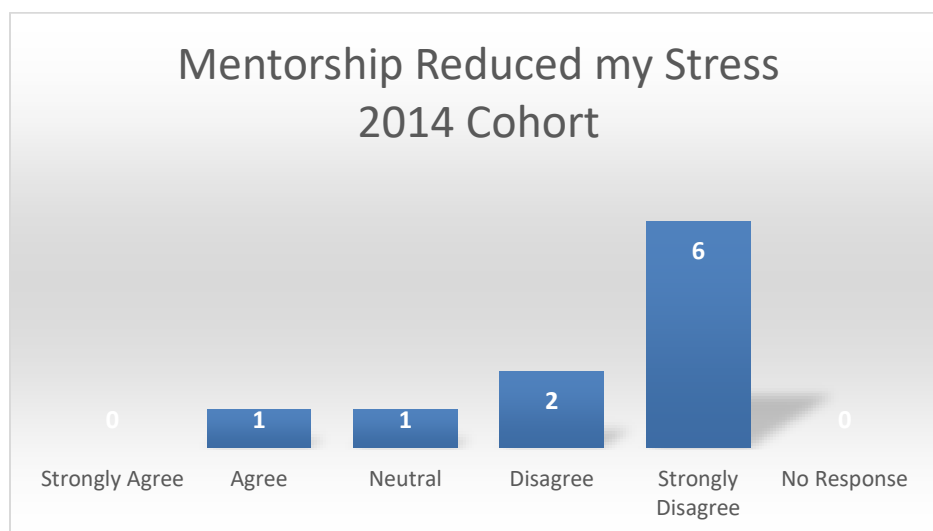
Another indicated that mentoring a first-year student did not improve academic progress but that it was a rewarding experience that improved morale. One participant stated, “It helped me having a little sister, I think it helped morale having someone else to talk to.”

Telephone interviews included questions about the National Board Dental Hygiene Exam (NBDHE). Mentorship was not expressed as the reason they graduated or passed the NBDHE; rather academic progress was related to the rigor of the program:

My school does get you ready to take all of your boards. I think having a Little Buddy or Big Buddy probably doesn't help you with national boards because everything you have learned along the way is what you need.

**Stress.** In response to the question about mentorship reducing stress, one participant agreed, one was neutral, and nine disagreed or strongly disagreed with statement that the Big Buddy mentorship reduced stress while in dental hygiene school (see Figure 11).

Figure 11. Mentorship and Stress Reduction



The 2014 telephone interview participants did not relate Big Buddy mentorship to their personal stress reduction. Rather, they related the mentorship they provided to stress reduction for their Little Buddy. Three of the four telephone interview participants indicated that their Little Buddy reached out to them when they experienced stress as a



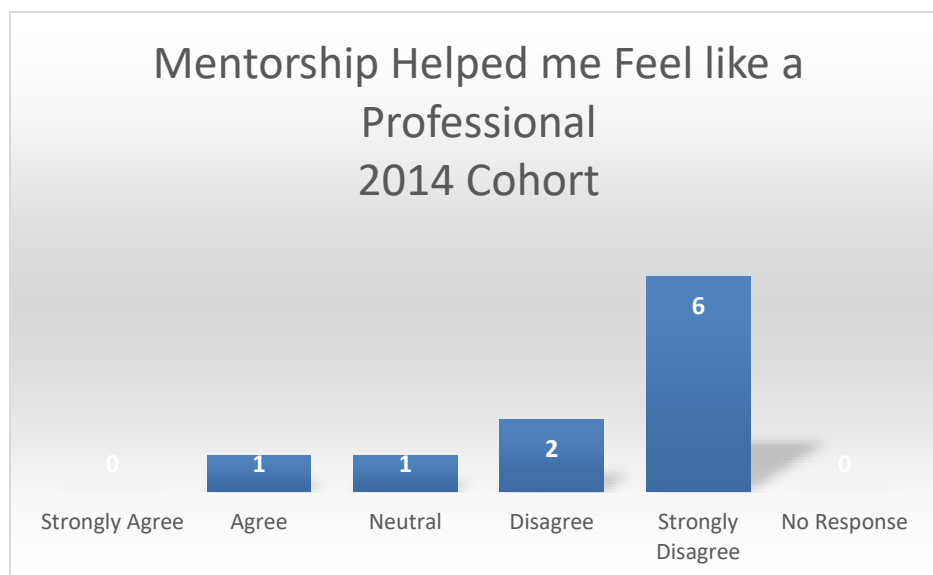
student and wanted reassurance. One participant stated, “We had a good relationship. She texted me anytime she would get stressed out. I would also text her.”

When asked about Big Buddy mentorship and academic progress one of the telephone interview participants related mentorship to stress reduction for her mentee. She described mentoring her Buddy as a rewarding experience as opposed to it benefiting her personal academic progress:

When I got to see my mentee and I could see right where she was. I knew the emotion she was having. It was nice to be able to alleviate her stress and I could see her shoulders drop. I wish I had somebody do that for me.

**Professionalism.** Among the 2014 cohort, one participant agreed, one was neutral, and eight disagreed or strongly disagreed with statement that Big Buddy mentorship helped them feel like a professional dental hygienist (see Figure 12).

Figure 12. Mentorship and Feeling Like a Professional



*Suggestions for improvements.* Three suggestions were provided when participants were asked on the on-line survey about changes they might recommend about Big Buddy mentorship. The suggestions were don't assign buddies, require mandatory program facilitated meetings, and don't skip accepting a class. During the telephone interviews two of the four 2014 participants had additional information they wanted to add related to consistently utilizing Big Buddy mentorship each year. They felt they helped their Little Buddies by providing guidance and wished that they had a Big Buddy: "I wish we had Big Sisters."

**Class 2015.** The graduating class of 2015 had mentors during the first year of their dental hygiene program and acted as mentors during their second year. During orientation, each member of the 2015 graduating class was paired with a Big Buddy; they also served as mentors to the 2016 cohort (not included in this study). The 2015 cohort received the Big Buddy Recall List through the usual clinic coordinator distribution and patient transfer instruction process and had opportunity to discuss the patient list with their Big Buddy. The 2015 cohort received professional mentorship at a dinner hosted in August 2013. This cohort was the only cohort in this study that experienced peer tutoring in the DH 118 Advanced Clinic Topics lab. In summary, the 2015 cohort experienced all four mentoring activities: general mentorship, receipt of patient names, professional mentorship, and peer tutoring.

The 2015 cohort described mentorship in general as beneficial as long as the mentor was willing to participate. Additionally, mentorship was considered beneficial

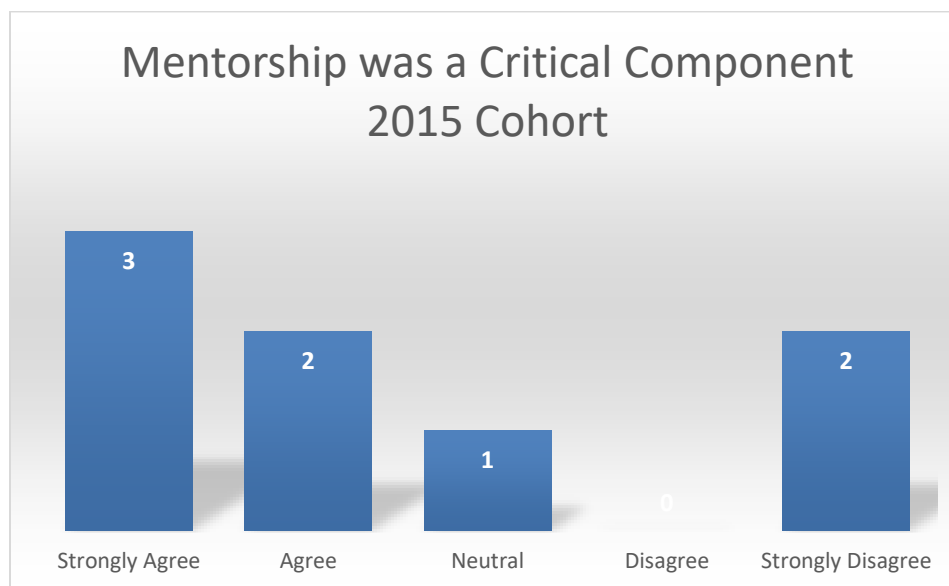
because it was perceived as boosting confidence. Two of the telephone interview participants stated:

Mentorship, I think is a really good thing because it helps give confidence to those trying to learn and trying to figure it out. If they have questions they can ask somebody. Most of the mentors I have had have been very positive and helpful. They show you that they believe in you and that you can do anything you want, so I think it is very good.

I think it's good. It helps to give confidence and give guidance. Mentees can be assuring of things and mentors can help with that.

Survey responses were somewhat bimodal in their endorsement of mentorship in the dental hygiene program. Five participants agreed or strongly agreed, one was neutral, two disagreed or strongly disagreed to the statement that Big Buddy mentorship was a critical component to their dental hygiene program. See Figure 13.

Figure 13. Big Buddy/Little Buddy Mentoring was a Critical Component of my Dental Hygiene Program



Responses from the survey and open-ended interview questions were similar. The 2015 cohort telephone interview participants experienced both positive and negative experiences with Big Buddy mentorship. Half of the interview participants found mentorship from their Big Buddy beneficial. Interview participants identified five benefits. Benefits included encouragement, awareness, resources, role modeling, and help with finding a job. With regard to encouragement one of the participants stated:

My mentor was amazing. I got super super lucky. My Big Buddy help me with just about everything. She was amazing. She helped me from the very beginning. She gave me advice, resources and encouragement. she was amazing. If I had questions, or was hesitant about a class, or if I was having trouble studying, or just feeling down and out because it's a stressful program, she would always encourage me.

Program awareness was identified as a beneficial component to Big Buddy mentorship. One of the participants stated, “My mentor was really really great. I didn't need too much but when I did have questions I did get good advice from her and it did help me to be more aware of certain things in classes and clinic.” Another participant stated, “If we had different projects she would tell me about her project and it just kinda gave me a basis of where to start even though my project was completely different.”

Sharing resources was identified as a beneficial component to Big Buddy mentorship. One of the participants stated, “For one of my classes she let me borrow her book so I didn't have to buy it. She just lent it to me.” Role modeling was also identified as a beneficial component to Big Buddy mentorship. One of the participants stated:

She was really good about talking to me and discussing really important things to be aware of so I could be ready for school and a job. I think it is a good and an important component because you can relate to someone and feel you're not alone. It felt good that she could do it, I could do it and we were a team.

Lastly, help with finding a job was identified as a beneficial component to Big Buddy mentorship. One of the participants stated:

She gave really good advice and even after that she gave me advice on how to get a job in the real world. I stayed in touch with my Big Buddy even after she graduated. We don't keep in contact a lot but we do text and talk about jobs. Mine personally gave me advice before she graduated about timing; how to get your license, where to go, and how to get a job.

Half of the interview participants did not report mentorship from their Big Buddy as beneficial. The challenge was that mentors did not take initiative and reach out to their mentees:

I did not have a helpful Big Buddy. The mentor that I was assigned to was not very involved in my education. She was very nice and asked me from time to time if I was doing okay but she did not take initiative and say, hey you need to do this or that. She did not really want to hang out. It was more like she would ask me how I was doing when we cross each other's paths in the hall.

Most of the 2015 interview participants reported feeling like they helped their mentee (2016 cohort). Interview participants identified five benefits they provided to their mentee. Benefits included awareness, encouragement, resources, role modeling, and friendship. With regard to awareness participants reported feeling like their mentorship increased awareness related to the classroom, clinic, instructor expectations, and both didactic and clinical examinations. One participant stated:

For my Little Buddy, what I did I was always talking with her and ask how she was doing. I would give her my notes for whatever classes she was in. I would give her tips for tests and stuff like that. We were never allowed to keep quizzes or tests so I would never give any of those but I would help her in any way I could. I definitely also gave her tips in clinic. There were certain instructors that were better to do test with so I would kind of let her know what I figured out there. You kind of freak out when you first start clinic, so I would give her tips on PEs. I would tell her to try here PEs and if she didn't pass, there would always be

another opportunity. I would tell her it was not the end of the world if she did not pass.

Interview participants reported feeling like they helped their mentee by sharing resources with their Little Buddy. One of the participants stated, “I would give her my old books and tell her to make sure she would study in certain ways.” Interview participants reported feeling like they helped their Little Buddy through role modeling and keeping things in perspective. They continued to keep in touch with their mentees even after they graduated. One participant described this by stating, “It's a little harder now to keep in touch but in school it was very easy. I would tell her not to forget to relax and make time for herself. I know school seems like everything right now but just take time for yourself also.”

Lastly, interview participants felt they helped their mentee by offering their Little Buddy friendship. Some friendships stood the test of time, even after they graduated.

I was a Big Buddy. I think we did have a good relationship. Even though I've graduated I still text her from time to time and say, hey how's it going. I ask her if she needs anything. We go to lunch sometimes and just hang out. Last week she found her board patient and she texted me that she found him. I told her congratulations. I think between me and my Little Buddy we had a good relationship because we still talk even though I have already graduated.

In contrast, one of the interview participants reported feeling like her mentee was not open to receiving her mentorship. This participant described her experience by stating:

As far as my Little Buddy. I tried to do the same for her that my buddy did for me because I was very grateful for it. But my Little Buddy, however, she is more independent. She is super nice. She was never rude at all, but she did not need as much help as I needed from my Big Buddy.

All indications were that no specific guidelines were provided about how to serve as a mentor. One 2015 telephone interview participant stated:

We knew what our Big Buddies did so we knew what we wanted and what they would need. But we only got a tiny bit of instruction. All we were told was to use our mentors and to find them and ask for help. We were told there was somebody else you could go to that was more in your shoes and more relatable, instead of going to your teachers. It was kind of left between our Big Buddies and us to figure out.

***Confidence and competence.*** When asked about gaining confidence through mentoring activities, four participants agreed or strongly agreed, one was neutral, and three disagreed or strongly disagreed with the statement that Big Buddy mentorship helped them gain confidence to enter professional practice. See Figure 14.



Figure 14. Mentorship and Confidence to Enter Professional Practice



Responses from the survey and open-ended interview questions were similar. The 2015 cohort reported both feeling confident and not feeling confident with initial clinical practice, but none linked Big Buddy mentorship with helping them gain initial clinical confidence. One participant reported that she did not have initial clinical confidence, but explained that advice from her work mentors helped her gain confidence over time with initial professional practice. Additionally, gaining confidence was associated with personal reflection about having graduated from an excellent dental hygiene program and with having had knowledgeable instructors.

One of the participants reported negative instruction while a dental hygiene student that impacted her initial clinical confidence when entering the practice of dental hygiene:

I believe I had a rough time in school with the teachers personally. So when I got into private practice I was not as confident as I am now. I was relaxed but I just

didn't have the confidence because I felt like I was always torn down in school. I felt like I could do my job and I knew what I was doing and knew what they needed me to do.

It appeared that nervousness was related to confidence. The majority of the 2015 respondents reported feeling nervous when they started the actual practice of dental hygiene, particularly related to time management.

Yes, I was nervous. Probably because it was my first time ever being in an office practicing, and I just received my license the day before, and I really didn't know what I was getting myself into. Mostly I was nervous about time management. I had never had to complete a patient in an hour. We always had four hours in school to finish patients so it's a little bit different in private practice.

Participants found decreased nervousness with varied amounts of time. The time ranged from a couple days to four months. Positive experiences with coworkers was reported as important in the transition. When asked how long it took to feel comfortable in practicing dental hygiene, one of the 2015 participants described the following:

Probably one month. That is because I was in a full-time fill-in 40 hours a week job. So I was exposed to it a lot. More than other beginning hygienists who only work one to two days a week to begin with. So I feel like I was exposed more within that one month, so that's why I got the hang of it in a month. All of the other coworkers were nice as well. So if you need help with anything they were all understanding. They understood I was new and said, they get it, and they understand it was overwhelming for somebody new out of school. Having other

people as well helping me out to find where things were. It was nice having more mentors along the way at work. That was nice.

Another aspect that contributed to feeling comfortable was repetition.

Additionally, one participant reported that her personal reflections contributed to feeling comfortable in practicing dental hygiene:

It took me a couple weeks to get comfortable with my office and learn all the ins and outs. Figure out how the office does things. Hearing my teachers in my mind helped. I just would think about going back to clinic and remembering all the basics and understanding that I know what I learned. I would think about how to hold the instrument, ergonomics. Going over everything I learned; hearing my teachers in my head. So reflecting on the basics and thinking about time management and going over everything in my head hearing my teachers and the things that I learned helped me feel more comfortable.

Telephone interviews also included questions about initial clinical competence.

The 2015 telephone participants reported feeling like they were competent to enter professional practice. Participants did not link Big Buddy mentorship to their clinical competence but connected their initial clinical competence to feeling confident. Two of the 2015 telephone interview participants described this by stating:

As far as competence I felt competent in what I was doing. I think that competence gets better as well when you are confident. It's nice to have both of those together. I did feel competent.

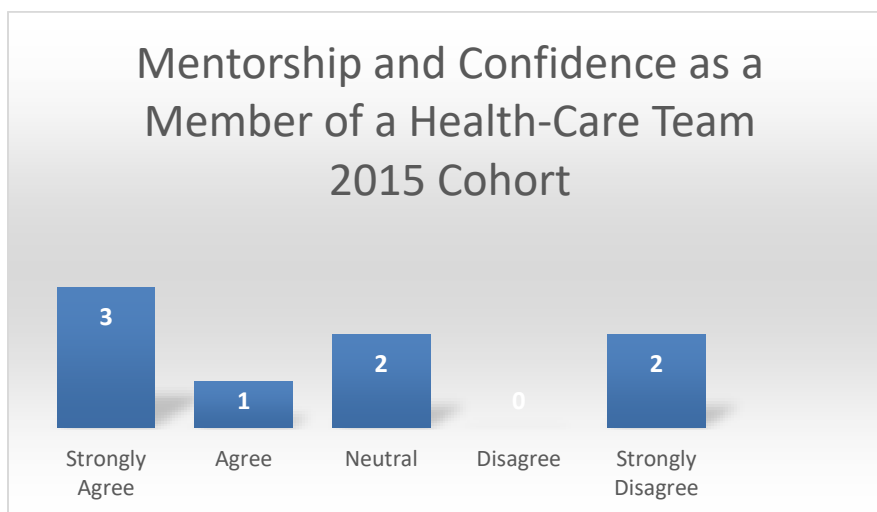
Because I knew I had the competence; with the great education and great clinical teaching, I had the confidence to be able to know I could do my job correctly. I believe competence comes with confidence.

Another 2015 participant elaborated on her initial clinical confidence. She described why she experienced initial clinical competence, describing her philosophy as a health-care professional related to competence and the importance of continued learning:

Competence is a continual learning process and you should always be going back and reviewing. I always try to go look at my notes or research on the computer, and make sure I'm on top of it, and that I'm remembering everything, and I try to learn anything new that comes up. I just to continue to learn, keeping up with everything is good for my competence and confidence, and good for my job. I felt clinically competent when I graduated.

***Member of health-care team.*** Among the 2015 cohort, four participants agreed or strongly agreed, two were neutral, and two strongly disagreed with statement that Big Buddy mentorship helped them gain confidence to work as a member of my first health-care team. See Figure 15.

Figure 15. Mentorship and Confidence to Work in a Health-Care Team



Responses from the survey and open-ended interview questions were similar. Interviews revealed that the 2015 cohort had mixed feelings about working with another health-care team member, outside of the dental field when entering professional practice. It must be noted that not all of the 2015 cohort participants had experience working outside of the dental field when they entered professional practice. Participants did not link Big Buddy mentorship with helping them feel comfortable with other health-care team members. Reported reasons for confidence related to feeling knowledgeable and that they worked in a relaxed and supportive environment. When asked to describe working with another health-care team member, outside of the dental field, one of the telephone interview participants stated the following:

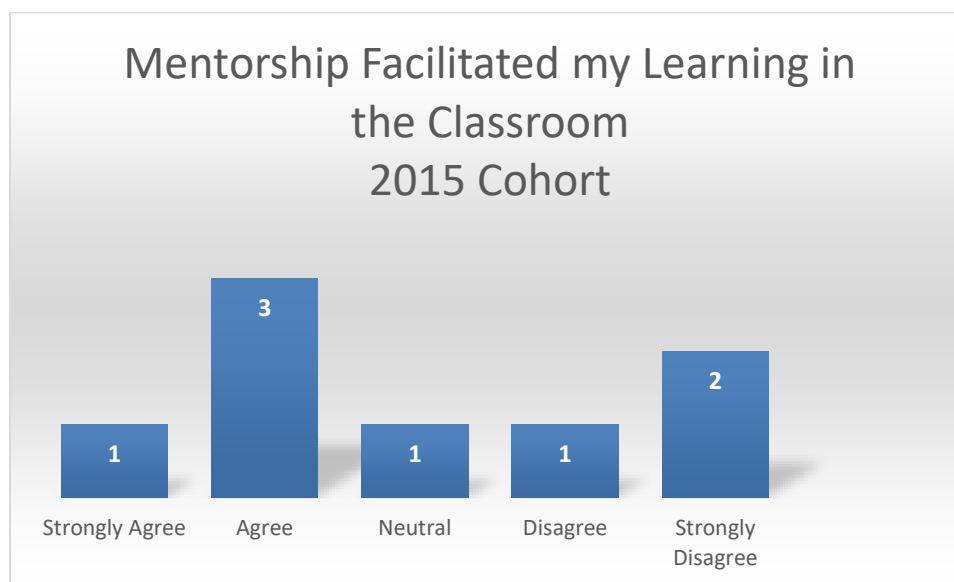
It was a little different than school. Who I work for is amazing. They are very relaxed. It's not uptight as school was so it's just easier to work. I was well prepared to talk to health-care team members outside of the dental field.

In contrast, other respondents indicated lack of confidence as a member of a health-care team. Nervousness was reported to be associated with the desire to satisfy the dentist employer and not knowing exactly what questions to ask:

It was a little nerve-racking. I guess because I had to call regarding a patient's premed. So, my dentist was giving me the patient's information about premed; about for how long she had to take it, and for what reason. I wanted to make sure I had all the right information and that I was asking all the right questions when I called the medical doctor's office; I did not want to miss out on any information.

***Classroom learning.*** Among the 2015 cohort, four participants agreed or strongly agreed, one was neutral, and three disagreed or strongly disagreed with statement that the Big Buddy mentorship facilitated my learning in the classroom. See Figure 16.

Figure 16. Mentorship Facilitated my Learning in the Classroom



Telephone interviews also included questions about Big Buddy mentorship and academic progress. Many of the statements indicated that academic progress was the result

of personal hard work. “My Big Buddy did not help me with my academic progress. I don’t think my mentor helped me personally. I just kinda did everything on my own.”

Another indicated that she was not sure if Big Buddy mentorship affected her academic progress; rather, she contributed Big Buddy mentorship with providing her with encouragement and emotional support, stating, “I don’t know if it actually affected my academic progress at all. It was just more like a mental encouragement and emotional support more or less. I don’t know if it really affected me academically though.” Another stated:

For me, very minor. I think that the biggest thing that helped was the Big Buddies telling us kind of what teachers were looking for and what they needed. Every teacher has their own personality and things that they like to see and how they do things. So I think academically it was all on my own except for little advices like, hey you're going to have a lot in the seventh week so don't get behind, tiny little pieces of advice about teachers and what areas they like. My mentor would tell me what teachers liked and what to focus on. She would tell me how to do things because she would know what the teachers wanted.

The 2015 telephone interview participants reported feeling that the mentorship they provided to their Little Buddy helped their mentee’s academic progress. One of the telephone interview participants stated the following:

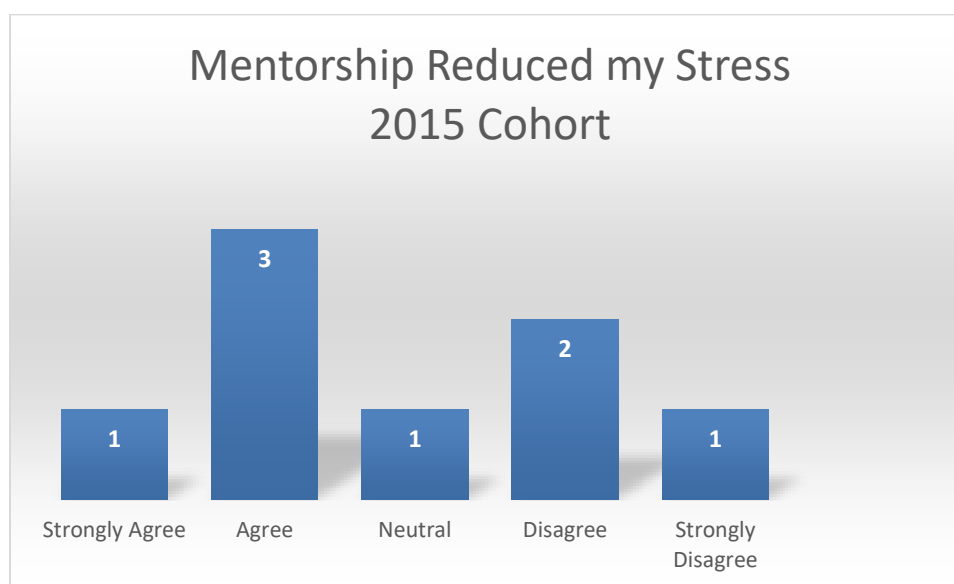
I helped my mentee with classroom, clinic, life issues. I also helped her to remember to take time for herself. But for my Little Buddy, she had a lot of questions about board review. I gave her guidance and told her what courses to

take and what to do. I would tell her what was beneficial and what was a waste of time. So me being the mentor was very helpful for my mentee.

Telephone interviews included questions about the National Board Dental Hygiene Exam (NBDHE). Mentorship was not expressed as the reason interview participants graduated or passed their NBDHE. Rather, the 2015 telephone interview participants described receiving support from their Big Buddy in the form of sharing study materials and providing encouragement.

**Stress.** In response to the question about mentorship reducing stress, four participants agreed or strongly agreed, one was neutral and three disagreed or strongly disagreed with the statement that the Big Buddy mentorship helped reduce my stress. See Figure 17.

Figure 17. Mentorship and Stress Reduction



Only one of the 2015 telephone interview participants related Big Buddy mentorship to stress reduction, but it related to her experience of acting as a mentor. This



participant stated, “I really enjoyed helping her out because I remember feeling the stress of first year, going through everything and not really knowing what you're doing.

Sometimes I would feel like I couldn't do it anymore and I was stressed and it was very helpful to talk to my Little Buddy.” Another telephone interview participant related Big Buddy Mentorship to stress reduction when she was describing additional information she wanted to add at the conclusion of the telephone interview. The stress reduction benefit was related to having a peer to talk with, in an unstructured format, rather than talking with an instructor:

It was nice that we were not forced to do anything. I like that we could do what we wanted. we could relate to our buddies and I like that the instructors did not have anything to do with it. It was nice to have a little extra support because you're so stressed out and you don't want to talk to your teachers. You want to talk to somebody who just went through it and knows exactly what you're feeling. The teachers don't, the teachers were sympathetic but sometimes you just need a student that's not a teacher and that is someone that is right there at the time.

***Professionalism.*** Among the 2015 cohort, four participants strongly agreed or agreed, two were neutral, and two disagreed or strongly disagreed with the statement that Big Buddy mentorship helped me feel like a professional dental hygienist. See Figure 18.

Figure 18. Mentorship and Feeling Like a Professional



***Suggestions for improvement.*** Three suggestions were provided when participants were asked what changes they would make about Big Buddy mentorship. The suggestions were don't assign buddies, require mandatory program facilitated meetings, and host a better meet and greet.

### **Summary of Mentoring Activities**

There were similarities and difference among the three cohorts during the timeframe of the study, 2011-2015. As indicated earlier, there were four mentoring activities: general mentorship, sharing patient names and information, professional mentorship, and peer tutoring. There were notable differences with the mentoring activities that each cohort experienced. The 2012 cohort experienced half of the mentoring activities: general mentorship and receipt of patient names. The 2014 cohort also experienced half of the mentoring activities, although they were different than the

2012 cohort: professional mentorship and receipt of patient names. The 2015 cohort experienced all four mentoring activities.

All three of the cohorts indicated a lack of guidance was provided with respect to acting as a mentor and/or a mentee. Similarities and differences are presented below related to Big Buddy mentorship and nine participant experiences: importance of mentorship in a dental hygiene program, clinical confidence, nervousness, clinical competence, feeling like a member of a health-care team, classroom learning, academic progress, stress reduction, and feeling like a professional.

Survey data related to the overall importance of mentorship revealed three very different perceptions. The 2012 cohort reported being positive to neutral about mentorship. The 2014 cohort was almost the opposite, with most of the participants disagreeing that mentorship was critical; the 2015 cohort was somewhat bimodal, with more agreement of the importance of mentorship, but with two strongly disagreeing about its importance. Qualitative data provided more nuance. It appeared that the responses were based upon the relationship between the mentor and mentee. When there was an actual relationship and it was perceived to be good, mentorship was reported as valuable. However, many indicated that either they or their mentor/mentee did not have time to spend together; in these situations, the perception was that mentorship was either not particularly important or perhaps negative. The demands of the program often were cited as the primary reason for lack of a relationship, although some indicated that their mentor/mentee was simply not interested.

The findings from the 2014 cohort were particularly noteworthy. Interview responses indicated that their interpretation of mentorship was having a mentor. When this cohort described being mentors, their interpretation of its importance was described in much more positive terms than was revealed in the survey data.

A similar pattern was revealed in the data related to confidence and competence to enter the workplace. The 2012 cohort reported being positive to neutral about their initial confidence to practice; the 2014 was the opposite, leaning toward negativity; the 2015 cohort was somewhat bimodal. What was most important in the telephone interviews was that for all three cohorts, after working for a few months, both confidence and competence were gained, particularly after the respondents became familiar with office procedures and were able to manage their time. When respondents indicated that they were initially confident and/or competent, the quality of the instruction they received was cited as the reason. The only reference to mentoring was the mentorship they received in the workplace. All three cohorts appeared to relate nervousness to their lack of confidence.

Feeling confident about being a member of a health-care team revealed a similar pattern. The 2012 cohort reported primarily neutral, but more positive than negative. The 2014 cohort was primarily negative. No specific pattern was identified in the 2015 cohort. Similar to statements about feeling confident and competent to enter the workplace, actual professional experience was cited as contributing to the respondents feeling comfortable working with other members of the health-care team.

A somewhat different pattern was revealed in the survey data about the relationship between mentorship and classroom learning. The 2012 cohort was predominately neutral about the role of mentoring in classroom learning. The 2014 cohort was mostly negative and no particular pattern was revealed for the 2015 cohort. Interview data indicated that the mentoring relationship was more important as an encouragement and a general morale booster than anything specific to academic progress. The exceptions were receiving specific tools to study for the NBDHE and two of the 2015 telephone interview participants indicated Big Buddy mentorship played a minor role in their academic progress by their Buddy telling them what the teachers were looking for and having someone to go to other than their instructor.

Survey results related to the relationship between mentorship and stress returned to the original pattern of the 2012 cohort reporting positive to neutral responses to the role of mentoring in stress reduction. The 2014 cohort was predominately negative. The 2015 cohort did not reveal a particularly strong pattern, but was more positive than negative. Similar to classroom learning, the advantage of mentoring was related to improving overall morale – that someone has been there too.

Although professionalism was asked in the survey, very few references were made during the interviews. The pattern in the survey responses was similar to the other responses. The 2012 cohort was more neutral to positive; the 2014 cohort more negative; and the 2015 cohort lacking a clear pattern.

In summary, during the telephone interviews Big Buddy mentorship was identified as a benefit with two of the nine participant experiences: academic progress

and stress reduction. Two of the 2015 telephone interview participants indicated that Big Buddy mentorship played a minor role in their academic progress. One of the 2012 and two of the 2015 telephone interview participants agreed that Big Buddy mentorship reduced their stress while in the dental hygiene program. Interview and survey data presented that there were notable differences with the four mentoring activities that each cohort experienced. The consistent patterns in responses revealed the 2012 cohort was more neutral to positive; the 2014 cohort negative; and the 2015 cohort lacking a clear pattern.

## **CHAPTER 5**

### **DISCUSSION AND CONCLUSION**

The purpose of this study was to explore the contribution of peer-mentorship in a dental hygiene program to confidence in initial professional practice. This chapter is divided into five parts. The first part is a review of the methodology used in this study. The second part presents a discussion of the major findings of the study. The third part focuses on the implications for practice. The fourth part is comprised of recommendations for future study. The final part provides the conclusions of the study.

#### **Methodology**

This study used a mixed methods research design which included interview data, survey results, and select test scores from institutional data. Both qualitative and quantitative data were used to develop an understanding of the contribution of peer-mentorship in a dental hygiene program to confidence in initial professional practice. A mixed methods approach provided the opportunity to compare different perspectives drawn from qualitative and quantitative data.

Telephone interviews were conducted following an IRB approved interview guide. Three faculty were interviewed; one of the three was present during the initial implementation of Big Buddy mentorship. Four students from each of the cohorts, 2012, 2014, and 2015, were interviewed.

Twenty-eight participants completed an on-line survey. They were asked to rank how Big Buddy mentorship related to different aspects of their experiences as dental hygiene students. Quantitative Likert-scale questions were included as well as a few

short answer questions which offered a qualitative component to the on-line survey.

Graduation rates and test scores for the three cohorts were reviewed. Test scores included the National Board Dental Hygiene Exam and state/regional clinical exam scores.

## **Discussion**

Two major findings were discovered during data analysis. Major findings were based on the triangulation of identified themes in the student interview data, faculty interview data, and quantitative data (graduation rates, test scores, and survey results). First, an improved educational experience was reported when the mentor/mentee pair established a good relationship. Second, confidence to practice dental hygiene was associated with program rigor and initial professional practice, rather than mentorship.

**Improved educational experiences.** The faculty indicated that the purpose of peer-mentorship was to improve the overall educational experience of the students. Little guidance was provided to the students about what was expected of general peer-mentoring. Indeed, faculty stated that it was up to the students to determine the degree to which they interacted with each other. In effect, general peer-mentoring activities were encouraged by faculty; however, lacking a specific structure and expectations, students could engage or not, depending upon their needs.

When relationships were established between mentors and mentees, improved experiences during their two-year dental hygiene program were described by the students. When pairs were reported as functioning, respondents described feeling supported and mentees received general information; stress was reported to have been reduced. When the relationship was not established or there was a lack of a mentor, mentorship was



either considered unimportant or, in the case of the 2014 cohort, actually deemed to be a disadvantage.

Kirkpatrick and Kirkpatrick (2016) developed an evaluation theory for judging the learning processes. He identified four levels of learning: reaction, learning, behavior, and results. The reaction-level of learning indicates how well the learner liked the learning process. The learning-level indicates the extent to which the learner gained knowledge. The behavior-level of learning indicates changed behavior in the learner. The results-level of learning is indicated by outcome measures. Findings from this study indicate that the general peer-mentorship of the dental hygiene program was associated with reaction level learning. In other words, Big Buddy mentorship was associated with students reporting that they enjoyed their academic experiences. There were no indications of higher level learning.

A nuanced perspective of mentoring was found in the data. In addition to pairing students for general mentorship during the new student orientation, faculty also established specific mentoring activities (i.e., sharing patient names, professional mentorship, and peer tutoring). It is noteworthy that these activities did not appear to be interpreted as mentorship by the student participants in this study. For these former students, mentoring appeared to be about their relationships, not activities.

**Confidence to practice dental hygiene.** Peer-mentorship did not appear to be associated with confidence in initial professional practice; rather the overall quality of the academic program and initial professional experience were credited with confidence to practice dental hygiene. Several of the participants in this study reported a lack of

confidence related to not having an instructor available to them in private practice. Comfort with initial professional practice was gained during the first few months from practicing clinical dental hygiene in the workplace. Becoming familiar with the routines of the workplace appeared to be important in their transition. In some cases, finding a mentor in the workplace was important. For the 2012 and 2014 cohorts, another important part of the transition was the realization that their dental hygiene program prepared them to practice dental hygiene.

Confidence in initial professional practice is related to a graduate's level of clinical competence. Clanton et al. (2014) studied the relationship between confidence and competence with the development of surgical skills among medical students undergoing surgical training. In their study, students reported improved confidence after training with a peer-mentor and demonstrated competence in surgical skills. Perry (2011) and Simonian et al. (2015) also reported that initial clinical confidence can be improved through peer-mentorship. Findings from this study differed. During the telephone interviews, none of the participants identified Big Buddy Mentorship with improved confidence in initial professional practice or competence.

### **Implications for Practice**

The Big Buddy mentorship under study was designed with an intentionally informal structure, yet the faculty added specific activities that they associated with peer-mentoring. There were implications for this lack of alignment. Mentorship can be either a formal or an informal process. Touringny and Pulich (2005) presented that informal mentorship utilizes an unstructured format whereby the roles of the mentor and mentee

are more dependent on the needs of each individual rather than the needs of the program. This describes the intent of the faculty as they originally designed Big Buddy general mentorship. It also describes the interpretation by the students in this study. When a positive relationship between the mentor and mentee was established, mentorship was reported as valuable.

Despite the informal structure originally envisioned, faculty identified three specific activities beyond general mentoring that they associated with peer-mentorship: sharing patient names, professional mentorship, and peer tutoring. Each activity had a specific purpose and faculty were adamant in their statements that these activities contributed to student learning and confidence. Faculty paid particular attention to the role that tutoring had on the students, indicating that peer tutoring had a positive effect on the students' confidence. This perception was not shared by the 2015 cohort, the only cohort to experience peer tutoring. One explanation for this is that the Big Buddy pairs were not utilized during the tutoring. As a result, it is possible that the 2015 cohort did not relate tutoring to a mentoring activity.

The findings of this study call for faculty to think carefully about what mentorship should be for their program and provide a structure accordingly. If mentorship is considered an important component of the program, clear guidance about roles, responsibilities, and mentoring activities must be provided to students. Faculty can offer mentor-mentee pairs input as they matriculate to assure the students are moving through the program with the intent of the CODA-approved curriculum and to offer referrals to student services if students are struggling with personal issues. If mentorship is

formalized, however, faculty contracts must be considered as well. This is particularly important if faculty are part of a collective bargaining contract.

Due to the findings of this study, if mentorship is formalized, an evaluation of Big Buddy is recommended to provide information specific to the effectiveness of mentorship. It would be imperative that an evaluation include assessment of learning beyond reaction-level learning. All of the students in each cohort graduated and successfully passed their state, regional, and national tests; therefore, a more granular assessment of the role of peer-mentorship in the dental hygiene program is recommended.

### **Recommendations for Future Research**

Further research is recommended to determine if there are any differences related to confidence in initial professional practice when a student experiences formal versus informal mentorship in a dental hygiene program. Further research is also recommended to determine if professional peer-mentorship (after a student graduates from dental hygiene school and enters private practice) can impact the quality of patient care in professional practice.

### **Conclusion**

Results from this study indicate that peer-mentorship as designed and implemented by the faculty of the dental hygiene program under study was not related to confidence in initial practice professionally. Confidence in initial professional practice was associated with program rigor. The informal structure of general mentorship resulted

in improved educational experiences when the mentor/mentee established a good relationship.

Learning is a complex process. Beyond personally mastering specific content and practices, learning often occurs in a social setting. In the program under study, the social setting included students and faculty. General peer-mentorship appeared to improve the experiences for the students who established positive relationships. Even the participants from the 2014 cohort, who reported that the lack of a mentor was a disadvantage to their experiences, indicated that they had established positive relationships with their mentees (the 2015 cohort). Although peer-mentorship did not improve graduation rates, test scores, or initial clinical confidence, the learning process was more enjoyable for students who engaged in positive mentoring relationships with a peer.

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Appendix A  
*Student Telephone Interview Guide*

1. **I am conducting a research study about the contribution of peer-mentorship in a dental hygiene program on initial clinical confidence in professional practice.** Tell me about your connection with the TMCC dental hygiene program
  - a. When did you graduate
2. Big Sister/Little Sister mentorship is a component of the TMCC dental hygiene program. Before we get into specific, how do you think about peer-mentorship in general?
  - a. Tell me about your experience with the Big Sister/Little Sister Program during your time in the TMCC dental hygiene program.
    - i. Tell me a bit about your relationship with your mentor/mentee?
    - ii. Did anyone give you guidance about how to serve as a mentor/mentee?
  - b. How about problems you experienced as being a mentor/mentee?
    - i. As a mentor ( if relevant)
      1. Cons
    - ii. As a mentee (if relevant)
      1. Cons
3. There are lots of reasons to include mentoring as part of an academic Program. Tell me how you think the Big Sister/Little Sister mentoring affected your academic progress? How about when you took your national, state, and regional exams?
4. I would like for you to think about when you first walked into the actual practice of dental hygiene. Were you nervous? If so, why. If not, why not?

5. How long did it take for you to feel comfortable in practicing dental hygiene? What contributed to feeling comfortable?
6. Describe what it was like working with another health-care team member, outside of the dental fiend, when you entered professional practice.
7. How did you experience clinical confidence and clinical competence when you entered professional practice?
  - clinical confidence
  - clinical competence
8. Is there anything else you would like to add



Appendix B  
*Faculty Telephone Interview Guide*

Faculty

**I am conducting a research study about the contribution of peer-mentorship in a dental hygiene program on initial clinical confidence in professional practice.**

*Definition: Peer-mentorship happens when a more experienced person-the mentor, is paired with a less experienced person, the mentee.*

1. Tell me about your connection with the dental hygiene program. For instance:
  - a. How long have you been on the faculty at TMCC?
  - b. Did you teach anywhere prior to TMCC?
  - c. Please tell me all of the institutions you attended.
  - d. Tell me about the TMCC Big Sister/Little Sister Program
2. From your experiences at TMCC, what are the pros and cons of peer-mentorship
  - a. For the mentor
    - i. Pros
    - ii. Cons
  - b. For the mentee
    - i. Pros
    - ii. Cons
3. You had a unique opportunity to observe three cohorts of students who had different peer-mentorship experiences. The class of 2012 served as mentees, but not as mentors; the class of 2014 served as mentors, but not as mentees; the class of 2015 served as both mentors and mentees. As you think about these three classes:
  - a. Were there differences between them in general?
    - i. Do you think these differences can be attributed to peer-mentorship or were there other factors that caused the differences?

4. As you think about these classes how do you think Big Sister/Little Sister peer-mentorship related to graduation rates, test scores, and confidence to practice initially?
  - a. Graduation rates
  - b. Test scores
    - i. National Board Dental Hygiene Exam
    - ii. State/regional clinical exam
  - c. Confidence to initially practice clinically
5. What were your experiences related to peer-mentorship and Interprofessional Education (IPE) when the dental hygiene program did not accept a cohort of student in 2013.
  - Class 2012
  - Class 2014
  - Class 2015
6. How did you experience clinical confidence and clinical competence with your students when the dental hygiene program did not accept a cohort of student in 2013?
  - clinical confidence
    - Class 2012
    - Class 2014
    - Class 2015
  - clinical competence
    - Class 2012
    - Class 2014

- Class 2015

7. Is there anything else you would like to add?

## Appendix C

### Student survey

#### Big-Sister/Little-Sister (Brother) Buddy Survey

1.

This survey is designed to gather information about the Big-Sister/Little-Sister (Brother) peer-mentorship program at TMCC. Peer mentorship happens when a more experienced person-the mentor, is paired with a less experienced person-the mentee. Peer mentors do not introduce new information to the mentee, rather mentors are used to offer a nurturing and trusting relationship to achieve a mutually beneficial outcome.

TMCC 2012 dental hygiene graduates served as mentees only; TMCC 2014 dental hygiene graduates served as mentors only; TMCC 2015 dental hygiene graduates served as both mentors and mentees.

\* 1. Year of Graduation

	2012	2014	2015
Year you graduated from Dental Hygiene School	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### Big-Sister/Little-Sister (Brother) Buddy Survey

2.

2. From your experience in the TMCC dental hygiene program, how do you rank the big sister/little sister (brother) effort?

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Big sister/little sister (brother) program was a critical component of my dental hygiene program.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Big sister/little sister (brother) helped me gain confidence to enter my first professional clinical practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Big sister/little sister (brother) helped me gain confidence to work as a member of my first healthcare team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Big sister/little sister (brother) facilitated my learning in the classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Big sister/little sister (brother) reduced my stress while I was studying at TMCC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Big sister/little sister (brother) helped me feel like a professional dental hygienist	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### Big-Sister/Little-Sister (Brother) Buddy Survey

3.

3. Please provide information about your experiences with the big sister/little sister (brother) program.

What was the best aspect of the big sister/little sister (brother) program?

### Big-Sister/Little-Sister (Brother) Buddy Survey

4.

4. If you could change one thing about the big sister/little sister (brother) program, what would it be?

#### Big-Sister/Little-Sister (Brother) Buddy Survey

5.

5. How would you rank the TMCC dental hygiene program?

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I felt confident in my first professional clinical position	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt confident interfacing with healthcare professionals outside of dentistry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### Big-Sister/Little-Sister (Brother) Buddy Survey

6.

6. Please indicate your age.

- ☐ 18-30  
☐ 31-50  
☐ 51+

#### Big-Sister/Little-Sister (Brother) Buddy Survey

7.

7. What is your income?

- ☐ Less than \$12,000
- ☐ \$12,001-\$24,000
- ☐ \$24,001 +

**Big-Sister/Little-Sister (Brother) Buddy Survey**

8.

8. Please indicate your race/ethnicity.

- ☐ White
- ☐ Hispanic/Latino
- ☐ African American
- ☐ Other

## Appendix D

### IRB Approval



University of Nevada, Reno

Research Integrity Office  
218 Ross Hall / 331,  
Reno, Nevada 89557  
775.327.2368 / 775.327.2369 fax  
[www.unr.edu/research-integrity](http://www.unr.edu/research-integrity)

DATE: January 26, 2016  
TO: Janet Usinger, PhD  
FROM: University of Nevada, Reno Institutional Review Board (IRB)

PROJECT TITLE: [834099-1] The Contribution of Peer-mentorship in a Dental Hygiene Program to Initially Professional Practice

REFERENCE #:  
SUBMISSION TYPE: New Project  
ACTION: DETERMINATION OF EXEMPT STATUS  
DECISION DATE: January 26, 2016  
REVIEW CATEGORY: Exemption Category # 2

--

The Research Integrity Office, or the IRB reviewed this project and has determined it is EXEMPT FROM IRB REVIEW according to federal regulations. Please note, the federal government has identified certain categories of research involving human subjects that qualify for exemption from federal regulations.

Only the Research Integrity Office and the IRB have been given authority by the University to make a determination that a study is exempt from federal regulations. The above-referenced protocol was reviewed and the research deemed eligible to proceed in accordance with the requirements of the Code of Federal Regulations on the Protection of Human Subjects (45 CFR 46.101 paragraph [b]).

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#### Reviewed Documents

- Advertisement - Recruitment e-mails (UPDATED: 01/11/2016)
- Application Form - Exempt 2 Tests Surveys Interviews Observation 110515 USINGER FELLMAN.docx (UPDATED: 01/13/2016)
- Consent Form - Information Sheets (UPDATED: 01/26/2016) - stamped version
- Data Collection - Data Use Agreement (UPDATED: 01/13/2016)
- Investigator Agreement - Signed approval letter to conduct research at TMCC (UPDATED: 12/18/2015)
- Questionnaire/Survey - online survey (UPDATED: 12/18/2015)
- Questionnaire/Survey - telephone interview questionnaire (UPDATED: 12/18/2015)
- University of Nevada, Reno - Part I, Cover Sheet - University of Nevada, Reno - Part I, Cover Sheet (UPDATED: 01/11/2016)

If you have any questions, please contact Valerie Smith at 775.327.2370 or at [valeries@unr.edu](mailto:valeries@unr.edu).

**NOTE for VA Researchers: You are not approved to begin this research until you receive an approval letter from the VASNHCS Associate Chief of Staff for Research stating that your research has been approved by the Research and Development Committee.**

Sincerely,





Richard Bjur, PhD  
Co-Chair, UNR IRB  
University of Nevada Reno



Janet Usinger, PhD  
Co-Chair, UNR IRB  
University of Nevada Reno

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Nevada, Reno IRB's record.

## Appendix E Community College Approval

### Truckee Meadows Community College Request for Subject Recruitment

**Instructions:**

This form is to be filed in order to recruit Truckee Meadows Community College (TMCC) students or faculty/staff as research subjects. This form must be filed prior to any type of recruitment on TMCC's campus.

**Date:** 12.11.15

**UNR Research Protocol number:** 834099-1

**Title of Study:** The Contribution of Peer-mentorship in a Dental Hygiene Program to Initially Professional Practice

**Principal Investigator(s):** Janet Usinger

**Co-Investigator(s):** Melissa Fellman

**Purpose of Study: (provide a brief summary of purpose)**

The purpose of this study is to explore peer-mentorship in a dental hygiene program to the initially confidence of practicing professionally. The central research question that will drive this study is: What is the contribution of peer-mentorship in a dental hygiene program to initial professional practice?

**Participants: (describe participants sought for study/archive data that will be utilized)**

The participants will include 36 students and three full-time faculty from your dental hygiene program. Students will be recruited from the dental hygiene student cohorts that graduated in 2012, 2014, and 2015. A mixed methods research design will be used. Quantitative data will be collected about all 36 students and include: surveys, graduation rates, and national and regional test scores. Surveys will be collected from all student participants to offer insight into the central research question. Graduation rates and test scores from the dental hygiene programs archive data will be collected from the dental hygiene program to assess academic outcomes. Qualitative data will include telephone interview with select students and all faculty who taught the three cohorts. Twelve students in total will be interviewed. Four will be graduated students who had mentors during the first year of their dental hygiene program, but did not act as a mentor during their second year. Four will be graduated students who did not have mentors during the first year of their dental hygiene program, but acted as a mentor during their second year. Four will be graduated students who had mentors during the first year of their dental hygiene program and acted as a mentor during their second year.

**Procedure: (description of procedure used with participants/or archive data, include time necessary for participation)**

Under the guidelines of the agreement the Dental Hygiene Program Director will provide a printed copy of the aggregate graduation rates for the 2012, 2014, and 2015 dental hygiene student cohorts. Under the same agreement, aggregate National Board Dental Hygiene Exam test scores and state/regional clinical exam scores will also be provided. For both data sources only aggregate data will be analyzed in order to protect the identity of individual students.

The Dental Hygiene Program Director will send a survey invitation email that describes the study and provides a survey link to each student from the three cohorts of students. The timeline to respond will be one week. Notification of this timeline will be in the survey invitation. The dental hygiene program Director will send out a follow-up survey invitation one week after the initial invitation. The Director has been selected to deliver the study participation invitation and survey link in order to protect the privacy of the student contact information prior to study participation acceptance. The email also includes an information sheet will cover the participation guidelines as well as inform the cohorts that the Dental Hygiene Program Director will not have access to their answers.

Four students from each cohort will be interviewed. The Dental Hygiene Program Director will send a separate email from the survey invitation email, to the three cohorts of students. The timeline to respond will be one week. Notification of this timeline will be in the telephone interview invitation. The dental hygiene program Director will send out a follow-up telephone interview invitation one week after the initial invitation. The telephone interview invitation email will include a research study information sheet. The information sheet will explain that interested participants need to call the researcher if they want to participate in an interview that will last approximately fifteen minutes. The four participants from each cohort will be selected based on a first-come-first-serve basis. Incentive to participate will include a \$10 Starbucks card which will be mailed to the participant after the completion of the telephone interview.

Telephone interviews will also be conducted with three dental hygiene faculty that were on staff during the matriculation of the three cohorts of students. The researcher worked as a colleague with all three faculty members and knows their contact information. The researcher will email the faculty inviting them to participate in this study. The email will include a research study information sheet. The information sheet will explain that interested participants need to call the researcher to participate in a 15 minute telephone interview. Incentive to participate will include a \$10 Starbucks card mailed to the participant after the completion of the interview.

- ☒ **Approved for subject recruitment**
- ☐ **Approved with the following revisions:**
- ☐ **Not Approved for subject recruitment**

**NOTICE:** If approved, the investigator must file a copy of the final approval of the University of Nevada, Reno (UNR) Internal Review Board (IRB) with TMCC's Human Subject Administrator prior to recruiting subjects. Approval to recruit subjects at TMCC is valid so long as approval is maintained through UNR's IRB.

Signature: \_\_\_\_\_

TMCC Human Subject Protections Administrator  
 Annida Fruzzetti, Ph.D.  
 Acting Dean, School of Liberal Arts  
 (775) 673-7135  
 afruzzetti@tmcc.edu

Date: \_\_\_\_\_

12/10/15

## Appendix F

### Data Use Agreement

#### Data Use Agreement

#### University of Nevada, Reno and Truckee Meadows Community College Dental Hygiene Program Data Use Agreement

##### Entity Requesting Data (AKA: Data Recipient)

Receiving Institution Name: The University of Nevada, Reno  
Data Recipient Name and Title: Melissa Fellman, Co-Investigator  
Address: 3735 Waldwick Cir., El Dorado Hills, CA. 95762  
Email: mmfellman@sbcglobal.net  
Phone: 775-722-7250

##### Entity Providing Data (AKA: Data Provider)

Providing Institution Name: Truckee Meadows Community College Dental Hygiene Program  
Contact Name and Title: Lori McDonald, Dental Hygiene Program Director  
Address: 7000 Dandini Blvd., Reno, NV. 89512  
Email: lmcDonald@tmcc.edu  
Phone: 775-674-7554

1. This Agreement applies to the following (select one):  
☐ Limited Data Set involving Protected Health Information  
☒ Other research data/information, describe: Graduation rates for dental hygiene students. National Board Dental Hygiene Exam data for dental hygiene students. State/regional clinical dental hygiene exam data for dental hygiene students.
2. This Agreement sets forth the terms and conditions pursuant to which the Data Provider will Disclose the following to the Data Recipient:

##### List of Data to Be Disclosed (AKA: Data Set):

Graduation rates for the student cohorts of 2012, 2014, 2015.  
National Board Dental Hygiene Exam data for the student cohorts of 2012, 2014, 2015.  
State/regional clinical dental hygiene exam data for the student cohorts of 2012, 2014, 2015.

3. Except as otherwise specified herein, Data Recipient may make Uses and Disclosures of the Data Set consistent with the purpose of the research as described in the application for the following research project:  
*Title of Research Project: The Role of Peer-mentorship on dental Hygiene Student Outcomes*
4. In addition to the Data Recipient, the individuals, or classes of individuals, who are permitted to use the Data Set for purposes of the Research Project, include:  
*Researcher Names: Janet Usinger and Melissa Fellman*
5. Data Recipient agrees to not Use or Disclose the Data Set (or components) for any purpose other than as described for the Research Project or as Required by Law.
6. Data Recipient agrees to use appropriate safeguards to prevent Use or Disclosure of the Data Set (or components) other than as provided for by this Agreement.
7. Data Recipient agrees to ensure that any agent, including a subcontractor, to whom it provides the Data Set, agrees to the same restrictions and conditions that apply through this Agreement to the Data Recipient with respect to such information.

*Subcontractor Names: Not Applicable*

8. Data Recipient agrees to report (within ten (10) days of discovery) to the University any Use or Disclosure of the Data Set (or components) not provided for by this Agreement, including without limitation, any Disclosure of the Data Set (or components) to an unauthorized subcontractor.
9. Data Recipient agrees not to contact any individuals from or about whom the data apply, and for Limited Data Sets, agrees not to attempt to identify the information contained in the Data Set.
10. Data Recipient will indemnify, defend and hold harmless the University's and any University affiliates' trustees, officers, directors, employees and agents from and against any claim, cause of action, liability, damage, cost or expense (including without limitation, reasonable attorney's fees and court costs) arising out of or in connection with any unauthorized or prohibited Use or Disclosure of the Data Set or any other breach of this Agreement by Data Recipient or any subcontractor, agent or person under Data Recipient's control.

**Signatures**

  
University of Nevada, Reno Signatory Official

Charlene Hart, MBA, CPA, CFE, CRA  
Assistant Vice President, Research Administration  
Sponsored Projects/325  
University of Nevada, Reno  
1664 North Virginia Street  
Reno, NV 89557  
775-784-4040

  
External Institution Signatory Official

Printed Name: Lori McDonald, RDH, MA  
Title: Dental Hygiene Program, Director

## Appendix G

### *Student Survey Invitation Email and Information Sheet*

To: Dental Hygiene Class 2012, 2014, and 2015

From: Lori McDonald, Dental Hygiene Program Director

Subject: Dental Hygiene Research Study Invitation

Dear TMCC Dental Hygiene Class 2012, 2014, and 2015

A doctoral student in the College of Education at the University of Nevada, Reno is conducting research related to peer-mentorship in a dental hygiene program. The purpose of the study is to explore the contribution of peer-mentorship in a dental hygiene program to initial professional practice. Graduation rates, test scores, and confidence to initially practice clinically will be explored. You are being invited to participate because you were a member of the 2012, 2014, or 2015 cohort of dental hygiene students at TMCC. If you wish to participate in the study please click on the link below and complete the 10 question survey estimated to take approximately 7 minutes. Your answers will be anonymous and cannot be seen by the dental hygiene program director sending out this email. The information sheet below explains the study details.

Survey link:

#### **Information Sheet**

We are conducting a research study to learn about the role of peer-mentorship on dental hygiene student outcomes.

If you volunteer to be in this study, you will be asked to complete a 10 question on--line survey. It should take about 7 minutes.

This study is considered to be minimal risk of harm. This means the risk level is typical to those encountered during your daily activities. You may experience recalling memories from your experiences in the dental hygiene program.

Benefits of doing research are not definite; but we hope to learn about dental hygiene student outcomes. There are no direct benefits to you in this study activity.

The researchers, the University of Nevada, Reno and TMCC will treat your identity and the information we collect about you with professional standards of confidentiality and protect it to the extent allowed by law. You will not be personally identified in any reports or publications that may result from this study. The researchers, the Department of Health and Human Service (HHS), and the University of Nevada, Reno Social Behavioral Institutional Review Board may look at your study records.

You may ask questions of the researcher at any time. The contact email address is: mmfellman@sbcglobal.net. You may also call the researcher at 775-722-7250.

The University of Nevada, Reno Office of Human Research Protection oversees all human research conducted by University researchers. If you have questions or concerns about the conduct of the study, call this office at 775-327-2367.

Your participation in this study is completely voluntary. You may stop at any time. Declining to participate or stopping your participation will not have any negative effects on your specific relevant circumstances such as grades, participation in the dental hygiene program, or participation in the professional dental hygiene association.

**Thank you for your participation in this study!**

## Appendix H

### *Student Telephone Interview Invitation Email and Information Sheet*

To: Dental Hygiene Classes 2012, 2014, and 2015

From: Lori McDonald, Dental Hygiene Program Director

Subject: Dental Hygiene Research Study Invitation

Dear TMCC Dental Hygiene Classes 2012, 2014, and 2015

A doctoral student in the College of Education at the University of Nevada, Reno is conducting research related to peer-mentorship in dental hygiene program. You have already been contacted to complete an on-line survey. If you wish to participate in a telephone interview please call the research at the phone number listed below. The interview is estimated to take approximately 7 minutes. Your answers will be confidential and anonymous. The dental hygiene program director sending out this email will not know if you do or do not participate in a telephone interview. The information sheet below explains the telephone interview study details.

Verbal informed consent will be obtained considering this study is utilizing telephone interviews. Please see the attached informed consent form.

A \$10 Starbucks card will be provided to you for your participation in a telephone interview.

**Telephone Interview Phone Number: 775-722-7250**

#### **Information Sheet**

We are conducting a research study to learn about the role of peer-mentorship on dental hygiene student outcomes.

If you volunteer to be in this study, you will be asked to participate in a telephone interview. Participants will be selected based in a first-come-first-serve basis. It should take about 7 minutes.

This study is considered to be minimal risk of harm. This means the risk level is typical to those encountered during your daily activities. You may experience recalling memories from your experiences in the dental hygiene program.

Benefits of doing research are not definite; but we hope to learn about dental hygiene student outcomes. There are no direct benefits to you in this study activity.

The researchers, the University of Nevada, Reno and TMCC will treat your identity and the information we collect about you with professional standards of confidentiality and protect it to the extent allowed by law. You will not be personally identified in any reports or publications that may result from this study. The researchers, the Department of Health and Human Service (HHS), and the University of Nevada, Reno Social Behavioral Institutional Review Board may look at your study records.

You may ask questions of the researcher at any time. The contact email address is: mmfellman@sbcglobal.net. You may also call the researcher at 775-722-7250.

The University of Nevada, Reno Office of Human Research Protection oversees all human research conducted by University researchers. If you have questions or concerns about the



conduct of the study, call this office at 775-327-2367.

Your participation in this study is completely voluntary. You may stop at any time. Declining to participate or stopping your participation will not have any negative effects on your specific relevant circumstances such as participation in the dental hygiene program or participation in the professional dental hygiene association.

**Thank you for your participation in this study!**

Appendix I  
*Student/Faculty Telephone Interview Code Sheet*

Student Participant Code *	Name of Student
12.1	
12.2	
12.4	
12.4	
14.1	
14.2	
14.3	
14.4	
15.1	
15.2	
15.3	
15.4	

Faculty Participant Code *	Name of Faculty
F1	
F2	
F3	

\* Participant Codes:

2012 Student Cohort Participants: 12.1, 12.2, 12.3, 12.4

2014 Student Cohort Participants: 14.1, 14.2, 14.3, 14.4

2015 Student Cohort Participants: 15.1, 15.2, 15.3, 15.4

Faculty: f1, f2, f3

## Appendix J

### *Faculty Telephone Interview Invitation Email and Information Sheet*

To: TMCC Dental Hygiene Faculty

From: Melissa Fellman, Researcher

Subject: Dental Hygiene Research Study Invitation

Dear TMCC Dental Hygiene Faculty

I am a doctoral student in the College of Education at the University of Nevada, Reno conducting research related to peer-mentorship in a dental hygiene program. If you wish to participate in a telephone interview please call the research at the phone number listed below. The interview is estimated to take approximately 7 minutes. Your answers will be confidential and anonymous. The information sheet below explains the telephone interview study details.

Verbal informed consent will be obtained considering this study is utilizing telephone interviews. Please see the attached informed consent form.

A \$10 Starbucks card will be provided to you for your participation in a telephone interview.

**Telephone Interview Phone Number: 775-722-7250**

### **Information Sheet**

We are conducting a research study to learn about the role of peer-mentorship on dental hygiene student outcomes.

If you volunteer to be in this study, you will be asked to participate in a telephone interview. It should take about 7 minutes.

This study is considered to be minimal risk of harm. This means the risk level is typical to those encountered during your daily activities. You may experience recalling memories from your experiences in the dental hygiene program.

Benefits of doing research are not definite; but we hope to learn about dental hygiene student outcomes. There are no direct benefits to you in this study activity.

The researchers, the University of Nevada, Reno and TMCC will treat your identity and the information we collect about you with professional standards of confidentiality and protect it to the extent allowed by law. You will not be personally identified in any reports or publications that may result from this study. The researchers, the Department of Health and Human Service (HHS), and the University of Nevada, Reno Social Behavioral Institutional Review Board may look at your study records.

You may ask questions of the researcher at any time. The contact email address is: mmfellman@sbcglobal.net. You may also call the researcher at 775-722-7250.

The University of Nevada, Reno Office of Human Research Protection oversees all human research conducted by University researchers. If you have questions or concerns about the conduct of the study, call this office at 775-327-2367.

Your participation in this study is completely voluntary. You may stop at any time. Declining to participate or stopping your participation will not have any negative effects on your specific relevant circumstances such as participation in the dental hygiene program.

**Thank you for your participation in this study!**

Appendix K  
Little Buddy Recall Form

**LITTLE BUDDY PATIENT RECALL LIST**

Student Name \_\_\_\_\_ Semester \_\_\_\_\_ Year \_\_\_\_\_

Little Buddy \_\_\_\_\_ Page \_\_\_\_\_ of \_\_\_\_\_

Treatment Record sample entry:

9/30/XX	<i>Preassigned to: (your Little Buddy's name here), for DH care for Sept. 20XX (highlight in pink)</i>
	<i>Student Signature:</i>
	<i>Instructor Signature:</i>

<b>Instructor Initials</b>	<b>Patient Name</b>	<b>Phone Number</b>	<b>Calc Class</b>	<b>Date Treatment Completed</b>	<b>No. of Visits</b>	<b>Comments</b>

## Appendix L

### Little Buddy Recall List Instructions

*To: First-year dental hygiene students*

*From: Clinic coordinator*

*Subject: Little Buddy Patient Recall List*

*I will be placing patient lists (Little Buddy lists) from your "Big Buddy" from this semester in your boxes. Many of the patients on this list are not due back until spring of 2012, but there are several that would be very good patients that you can appoint in the fall. You should have also received a list from the fall semester. I still have copies of those lists if you misplaced yours and you are interested. You should pull the patient chart for more information before you schedule them.*

*You are not required to see all of these patients. This is just a resource for your benefit to help you fill your schedule. Although, if one of the patients on your list does call for an appointment, you will get a message. It is your responsibility to then contact that patient within a week and appoint them or let me know if that is not possible.*

*Any questions about this procedure - please ask.*

## **TMCC**

### **Little Buddy Patient Recall List**

#### **Instructions**

*Each semester, when the student finishes the patient (for the year), the student puts the patient on the Little Buddy Patient Recall List. The patient is informed of the process by the student.*

*Example for procedure for patient treatment record entry:*

- *The student completes patient treatment on April 16, 200X.*
- *At this last appointment, the student enters in the patient treatment record that the patient is "complete".*
- *The next treatment record entry is highlighted in PINK and states the following:*
  - *"Patient preassigned to Little Buddy Sue Smith for DH care in October 200X." Student signs, instructor signs.*
- *The student then writes the required information on the Little Buddy Patient Recall Form. The instructor signs this form at the last appointment after verifying that the student has written and highlighted the entry in the patient treatment record.*
- *The patient treatment record entries and Little Buddy Patient Recall Lists are audited at the end of each semester during student conferences.*
- *At the end of the semester the Little Buddy Patient Recall Lists are then distributed: the Big Buddy and the clinic manager receive copies and the Little Buddy and Instructor Copy are kept by the clinic coordinator until the appropriate time for distribution to the Little Buddy.*

*Patients can initiate phone calls for an appointment. The chart is pulled and checked for the Little Buddy name and the information is then given to the Little Buddy student. The patient is advised that their student dental hygienist will be calling them for an appointment. If the patient has not had an appointment in two or more years and the last highlighted entry shows a graduate name, then the information is given to the clinic coordinator who distributes the chart appropriately to a student.*